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REPORTS ON "TEACH," TEACHER EDUCATION FOR ADVANCING THE CULTURALLY HANDICAPPED. ELEMENTARY TEACHER PREPARATION.

BY- HANNA, LYLE AND OTHERS
CALIFORNIA STATE COLL., LOS ANGELES, SCH. OF EDUC.

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TO DECREASE CULTURE SHOCK TO THE TEACHER IN A DISADVANTAGED CLASSROOM, A PROGRAM OF ON-SITE TRAINING CONDUCTED UNDER PROJECT "TEACH" WAS ADMINISTERED TO 30 SELECTED ELEMENTARY-EDUCATION MAJORS. THE AIM OF PHASE I WAS TO CREATE AND IMPLEMENT CURRICULA INCORPORATING MEANINGFUL COURSES DESIGNED FOR TEACHERS OF THE CULTURALLY DEPRIVED. STUDENTS WERE TAUGHT COURSES IN CURRICULUM, INSTRUCTIONAL PROCEDURES, AND LANGUAGE ARTS MATERIALS. A PROGRAM OF OBSERVATION AND PARTICIPATION WAS INITIATED, AND DIRECT CONTACT WAS MAINTAINED BETWEEN SCHOOLS, CHILDREN, AND TEACHERS. AFTER TRAINING, THE STUDENTS APPLYING FOR JOBS IN THE DISADVANTAGED AREA WERE IMMEDIATELY HIRED. PHASE II WAS A FOLLOW-UP OF THESE STUDENTS DURING THEIR FIRST YEAR OF TEACHING. QUESTIONNAIRES WERE SENT TO STUDENTS TO DETERMINE THEIR REACTIONS TO TEACHING IN THE LIGHT OF THEIR PREPARATION, AND TO THEIR PRINCIPALS TO COMPARE "TEACH" TEACHERS WITH OTHER NEW TEACHERS. RESULTS INCLUDE--(1) POSITIVE REMARKS OUTWEIGHED NEGATIVE ONES. (2) SOME TEACHERS VOICED THE UNIVERSAL COMPLAINT OF NEW TEACHERS ABOUT FEELING INSUFFICIENTLY PREPARED IN THE SUBJECT MATTER, METHODS, AND CLASS CONTROL, A COMPLAINT SELDOM SHARED BY PRINCIPALS. (3) ALL "TEACH" TEACHERS FELT PROJECT "TEACH" WAS A DEFINITE HELP TO THEM. (4) ADJUSTMENT SEEMED SWIFT AND CONFIDENT. (5) ADMINISTRATORS HAD FEW NEGATIVE COMMENTS AND RATED "TEACH" TEACHERS ABOVE OTHER NEW TEACHERS. IT CAN BE CONCLUDED THAT MUCH OF THE PROJECT SUCCESS WAS DUE TO THE CONDUCT OF TRAINING IN THE TARGET AREA. (AF)

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TEACHER EDUCATION
FOR
ADVANCING THE
CULTURALLY
HANDICAPPED

TEACH

PROJECT REPORT • IMPLICATIONS AND RECOMMENDATIONS

Psychological
Sociological
Philosophical
Historical

FOUNDATIONS FOR TEACHER PREPARATION

ELEMENTARY TEACHER PREPARATION

SECONDARY TEACHER PREPARATION

READING TEACHER PREPARATION

1947

CALIFORNIA STATE COLLEGE AT LOS ANGELES
SCHOOL OF EDUCATION

REPORTS
ON
"TEACH"

Teacher Education for Advancing the Culturally Handicapped

School of Education
California State College at Los Angeles
January, 1967

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PREFACE

Project "TEACH", Teacher Education for Advancing the Culturally Handicapped, was a two year teacher-preparation study funded by the Office of Juvenile Delinquency and Youth Development, Department of Health, Education, and Welfare.

The Project, under the direction of Dr. Lyle Hanna and Co-directors Dr. Rexford W. Bolling, Dr. Lois V. Johnson, Dr. Kenneth A. Martyn, and Mrs. Elsa May Smith, was a cooperative undertaking of the California State College at Los Angeles, the Los Angeles City Schools, and the Youth Opportunity Board of Los Angeles.

The Project had one major objective, The Preparation of Teachers for Schools of the Inner City. But, it must be recognized at the outset, that whatever success achieved was due to the efforts of many dedicated people ranging across the spectrum from the student participants in the target schools and in the college program to administrative personnel in the Los Angeles City Schools and the California State College at Los Angeles. In the small space available for the acknowledgments, it is impossible to mention by name all those who contributed to the Project.

We wish to recognize the contribution of two pilot projects which furnished basic concepts to be expanded by Project TEACH. These were the Thomas Jefferson High School and the Utah Street Elementary School off campus programs. They developed the framework for teaching methods and techniques in the pre-service preparation of teachers for culturally disadvantaged pupils.

The study was an interdisciplinary approach to the preparation of teachers for disadvantaged areas using consultants from the areas of history, philosophy, psychology, sociology, and cultural anthropology. New curricula was developed to better prepare teachers entering the teaching profession for the specific tasks they will encounter in teaching children enrolled in elementary and secondary in culturally deprived urban areas. Thirty elementary majors and thirty secondary majors were selected to participate in the Project and received their teaching methods in participating schools in the target area, commonly called "Watts." This experience included method courses, observation, and participation programs in Compton Avenue Elementary School, David Starr Jordan High School, Markham Junior High School, One Hundred and Eleventh Street Elementary School, and Ritter Elementary School.

Due to the complexity of the program the results were published in a series of five reports. Included in the series are the following:

Project Report, Implications, and Recommendations
Foundation Courses for Teacher Preparation
Elementary Teacher Preparation
Secondary Teacher Preparation
Reading Teacher Preparation

It is hoped that these reports will be used in the formulation of teacher preparation programs and be used as a stimuli for further treatment and expansion of teacher preparation programs.

Grateful acknowledge is made to the staff of the Office of Juvenile Delinquency and Youth Development for their encouragement and review of the program. Appreciation is also expressed to Dean Sando, of the School of Education, who encouraged the staff of the School of Education to develop the proposal and to Dean Dahl, his successor, who has seen Project TEACH through to completion. Both men gave the leadership necessary to guarantee the success of such a cooperative effort.

Dr. Mary A. Bany, Chairman of the Elementary Education Department, and Dr. Robert J. Forbes, Chairman of the Secondary Education Department, assumed the leadership roles in their respective departments and insured the success of the program through allocation of staff time and the infusion of promising practices into the regular teacher preparation programs.

Special mention should be made of the efforts of Mr. Sam Hamerman, Director of the Office of Urban Affairs, for the Los Angeles City Schools. He devoted many hours in counseling the staff in the development of the original proposal and established a working relationship with the City Schools.

The contribution of Dr. Marian Wagstaff should be recognized. It was through her efforts that representatives from the college and from the Los Angeles City Schools met to explore the preparation of teachers for urban-area schools.

The names of the Co-directors have been intentionally left to the last as their contributions to the Project cannot be described by mere words. They devoted many hours beyond their regular prescribed load and developed insights to the problem which qualify them as experts in their respective fields.

Dr. Rexford W. Bolling worked with the Elementary majors and developed the reports on the teaching of reading.

Dr. Lois V. Johnson coordinated the Elementary curriculum development portion of the Project and abstracted research in the field, developing the Bibliography alphabetically by author under appropriate categories. This Bibliography includes over 450 items.

Dr. Kenneth A. Martyn coordinated the evaluation of the Project, edited the final report, and was responsible for the portion of the report dealing with the Foundation areas.

Mrs. Elsa May Smith coordinated the Secondary curriculum development report, supervised the teacher training program at the secondary level, and directed the secondary student-teaching program.

Grateful acknowledgment is made to the college students, who participated in the Project. Their reactions to various parts of the program have been the basis for the development of recommendations for pre-service and in-service programs for teachers in urban areas.

For additional copies of the report or for specific information, contact:

Lyle Hanna, Associate Dean and Project Director
School of Education
California State College at Los Angeles
5151 State College Drive
Los Angeles, California 90032

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INTRODUCTION TO THE ELEMENTARY TEACHER PROGRAM

In every major city in the United States there is a migration of teachers from disadvantaged areas to suburban and advantaged areas. While the size of this migration may vary from city to city, its existence is acknowledged in every study of the schools in every major city in America. It shows up in the studies which indicate that there is a larger proportion of inexperienced teachers in slum schools. It shows up in the figures on the length of experience within a given assignment by teachers in disadvantaged schools and disadvantaged areas. It shows up in the higher proportion of substitutes or less well prepared teachers that are assigned in disadvantaged areas. And whereas the accusation that this is the result of discrimination on the part of personnel policy of the school boards is often made; the accusation is rarely sustained by the facts. The real problem is that the teachers do not choose to teach in disadvantaged areas and no forced system of assignment has so far been successful in making a major improvement in this problem.

Frank Riessman described the problem of preparing the teacher so that he has at once a realistic picture of what teaching in disadvantaged areas is like and at the same time not a fearful picture--a fear based upon a lack of knowledge of what such an assignment is like.

> He said, "Much is unknown about the underpriviledged and still more is controversial. While there are a number of images of lower socio-economic groups, one that is particularly popular today portrays the deprived individual as uncontrolled, aggressive, sexually loose, primitive, and insensitive. This image is frequently found in the writings of Tennessee Williams, and has been portrayed on the screen by Marlon Brando. It is the Blackboard Jungle picture. It is a dangerous image from the point of view of achieving constructive educational changes. A teacher going into a school in an underpriviledged area with this picture in mind is likely to be pessimistic, cynical, and afraid."[1]

Los Angeles City Schools have long recognized the need to make major improvements in the number and training of teachers in disadvantaged areas and cooperated in the initial inquiry regarding the possibilities of Project TEACH as one means of helping to overcome this problem. Elementary teachers are particularly important in any attempt to overcome the cycle of failure and social dependency and despondency that has received national attention in the past few years in our major cities. It is the elementary teacher who plays the major role in the development of pupil communication skills.

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1. Riessman, Frank . "The Culture of the Underpriviledged: A New Look." Knowing the Disadvantaged. Edited by Staten W. Webster. San Francisco, California: Chancellor Publishing Company, 1966, p. 53.

The staff of the President's Commision on Juvenile Delinquency recognized the key role that schools play in the development of the attitudes of youth in disadvantaged areas. A key role in the whole cycle of despondency and failure which is such a central part of the problems in disadvantaged areas. The proportion of youngsters who lack basic literacy skills is intolerantly high. The relationship between the lack of literacy skills and other problems is direct. The tools for social mobility and the resulting possibilities for motivation are directly related to skills that the school, when functioning at its best, can aid the youngster in developing. This is particularly true in the elementary school where a major contribution can be the development of literacy skills.

Not only are these skills important in the sense of usefulness to further education but they are also important to the youngster because they make a tremendous difference in his own picture of himself as a person. Is he a person who is successful, who can accomplish things, who can communicate, who can learn, or does he picture himself as one who is a failure, who cannot learn, who cannot understand, who cannot be successful. It is important that the elementary teacher preparation and the elementary school curriculum, particularly in the primary years, be of such vital concern to all who have studied and made concentrated efforts on the problems of urban education. It is for this reason that the elementary teacher preparation, part of the Project TEACH, was considered to be a vital concern of those who participated in the project.

What can we do in the preparation of teachers to make them at once more likely to be successful as teachers in disadvantaged areas and also to be willing to remain in disadvantaged areas and to continue to make a contribution rather than migrating when they have received tenure to the more advantaged areas. This is the problem that is confronted by school districts in large cities everywhere. This project attempts to demonstrate that concentration, training the prospective teacher so that not only his student teaching but his methods, his academic work, and his own outside work experience taking place in schools in the heart of disadvantaged areas would decrease, the cultural shock of the teacher when he is finally credentialed and on his own in the classroom. It was with this goal in mind that Project TEACH was started.

The following questions are worthy of further investigation:

1. Should some thought be given to improving the language arts abilities of elementary school children in areas of cultural deprivation? The section on methods for teaching language arts might be reviewed with a critical attitude to ascertain whether:
    - a. It is too middle-class oriented.
    - b. Negro children are learning with the techniques taught.
    - c. Experimental work will help investigators produce effective change.
    - d. A more rigorous experimental approach would be better to produce such change.

CHAPTER 1 - LANGUAGE ARTS INSTRUCTION FOR THE EDUCATIONALLY DISADVANTAGED IN ELEMENTARY SCHOOLS

Language Background of the Educationally Disadvantaged

The language arts are functional in every activity and experience in which the child participates in the classroom. Language plays an important role at all levels and in all aspects of learning.

When the educationally disadvantaged child enters upon the school situation, his language background has been such that it is insufficient and inadequate for helping him meet the demands of the school curriculum. In the educationally disadvantaged home generally either a language other than English is spoken or a dialect of English is spoken which is at considerable variance with standard regional dialects of American English. This situation tends to penalize the disadvantaged child in auditory discrimination, vocabulary, and syntax.

First, because the child has been exposed to a somewhat different system of speech sounds, he may have difficulty in comprehending the speech of others and may pronounce English words incorrectly in his own speech. The results of a study of Tireman (1) of the vocabulary of Spanish-speaking children showed that phonetic interference caused by differences in the phonemic structure of English and Spanish was cause for many errors in pronunciation and meaning of English words. For example, when the word being tested was hit, the child would give the ee sound to the short i sound. This response then sounded like heat, and the child would speak of the "heat of the stove" when using the word in a sentence.

Second, the disadvantaged child's vocabulary is inadequate because concepts which he has developed may have labels or names which are unique within his own culture. For example, when the Negro child asks, "Will you carry me to school?", he means "Will you take me to school?" When his mother asks the child to crank the window, she is asking him to open the window. When the father tells the child to stop meddling, he is telling him to stop fighting. The child also may have no names or labels at all for certain concepts since he has not had opportunities to communicate about them with anyone. For example, the child may not know the names of the various parts of his body when he enters kindergarten because he has not talked about them with anyone at home.

Third, the syntactical structure with which the child is familiar is frequently quite at variance with that which he hears or tries to read in school. Both the word order and degree of complexity of the sentences in the textbooks and which the teacher uses in the classroom are likely to overwhelm the disadvantaged child. In the disadvantaged home much communication may be through gestures and other nonverbal means. Rather than naming objects when speaking about them, the particular objects may be pointed to or may be spoken of as "that thing." Language that is used is likely to be terse and not grammatically correct. There is probably a minimum of non-instructional conversation directed toward the child and the child very likely has insufficient practice in attending to prolonged speech sequences.

The scarcity of objects of all types in the child's home environment and the tendency for the child to be restricted to the severely depressed environment of his home and the immediate neighborhood also contribute to the language deficiencies of the disadvantaged child. This deleterious environment results in the development of a meager repertoire of concepts. Frequently the child does not perceive that objects have names because of the absence of discussion in the home. The child does not relate verbal symbols to specific objects or concepts and is, therefore, deficient in his vocabulary. Neither does the child, in many cases, perceive that the same objects may have different names. For example, a child may have learned that the word chair refers to an object which he sits on. However, when his teacher asks him to take his seat, he may not follow through as directed because he does not associate the word seat with the object to which he related the word chair.

In a report of the limitations of vocabulary of disadvantaged children, Figurel (2) states that "less than half of the words in the vocabulary of (middle-class) preschool children are known by second grade children in slum areas." He goes on to say that "common name words such as sink, chimney, honey, beef, and sandwich are learned by culturally disadvantaged children one or two years later than by other children." He further states that in grade two these children have a vocabulary which is approximately one-third that of their middle-class counterparts and that by grade six, it is about one-half. The child's deficiency in vocabulary development plays a large part in his falling increasingly behind in school subjects when compared with middle-class children. On the average, by the time these children reach the eighth grade, they are about three years behind in reading as well as in other subjects. The achievement deficit of these children has been found to be cumulative and increases as the child progresses through the grades.

Besides being handicapped by his restricted environment, the disadvantaged child is not likely to have derived a great amount of meaning from the experiences which he has had. Because his parents are likely to lack the skills necessary to guide the child in perceiving the things which he has experienced, the child probably will lack the opportunity to verbalize his ideas about his experiences and will yield very little in terms of a significant body of meaning or concepts.

The educationally disadvantaged home is usually not a verbally oriented environment. There is generally very little verbal interaction between the parents and the child. The size of the family, the concern of the parents with the basic necessities of life, and the low level of educational development of the parents conspire to reduce the language development of disadvantaged children. The time that the parents do spend with their children is usually not used effectively in developing the verbal skills of the children since the parents themselves do not have the skills or language ability needed to foster the language and cognitive development that will help the child in school.

The child does not have the opportunity to receive corrective feedback when he speaks and he is not given practice or encouragement to participate in conversation and develop his language skills. Such a child would use a significantly smaller proportion of mature sentence structures, such as compound and complex sentences. He will use fewer words with less variety to express himself. He will be deficient in his ability to handle multiple attributes of words and to associate words with their proper referents because he has not been sufficiently exposed to language.

The home environment of the disadvantaged child is frequently a noisy one, but the noise is not, for the most part, meaningful in relation to the child. The background of noise from the radio, television, and the sound made by many people living in crowded quarters is ideal for the child to learn inattention. Therefore, when he enters school the disadvantaged child tends to learn less from what he hears than does the middle-class child. The teacher will need to work to develop his listening skills.

It is estimated that only sixty to eighty per cent of any sustained communication is usually heard. It is important then for the child to develop some anticipatory language skills before he enters school. The correct anticipation of the sequence of language and thought being spoken would result if the child has some knowledge of the context and of the syntactical regularities of the language. However, because the disadvantaged child's home environment usually lacks the factors which would develop the knowledge and skills needed for accurate and full comprehension of a speech sequence, he is greatly handicapped in the school situation.

In the educationally disadvantaged home because free adult time is greatly limited, the quarters overcrowded, and the general educational level very low, the child does not learn to use the adult as a source of information, correction, and the reality testing involved in problem solving and the acquisition of new knowledge. The child is not encouraged to ask questions, as the adults might be unable to respond correctly to the child's inquiry and anyway are too preoccupied with the business of just living and surviving. Thus, because questions are not encouraged or answers not supplied, the disadvantaged child usually does not develop the ability to question. The need for this ability becomes more important as the child progresses in school with more and more complex subject matter being introduced. Questioning, then, is not only desirable but essential. Frequently because the disadvantaged child does not request clarification when instruction is being given, he falls farther and farther behind in school, and he becomes progressively more frustrated and inattentive as he does not understand and is disinterested in what is being presented.

A language analysis by Bernstein (3) revealed that the disadvantaged tends to use informal language and mainly to express concrete needs and immediate consequences, such as the adult commanding the child to perform some function. Middle class usage tends to be more formal and to emphasize the relating of concepts. These differences in language usage probably contribute to the advantage which the middle class child holds over the disadvantaged child in tasks where precise and somewhat abstract language and critical thinking ability are required for solution.

From the foregoing, it is evident that when the disadvantaged child enters school he will encounter many problems and difficulties if the curriculum is not adapted to his needs. If the teacher is not aware of the language deficiencies which he may have because of his home environment and his previous lack of language experiences, such a child would have few successful and rewarding experiences and much failure and generalized frustrations and negative feelings about school. Of course, not all the negative factors and deficits discussed here are present in every disadvantaged child. They may be present in varying degrees in various children or, in some cases, not be present at all. However, it is important that the teacher of such children have a knowledge and understanding of their home environment and the language deficiencies that may result so that he can adapt the curriculum to their individual needs and develop those skills in the children that will make the school experience a stimulating and rewarding one.

Influence of Teacher-Pupil Relationships on Language Development

The atmosphere of a classroom reflects, of course, the attitude of the teacher. For the teacher of educationally disadvantaged children it is especially important that she maintains a happy, relaxed school atmosphere, one in which a child is free to converse, to enjoy and share experiences, to use language, to make mistakes and to correct them. If a child speaks a language other than English or a substandard dialect of English at home, the teacher should be accepting of the language or dialect with which the child is most familiar. She should help the child see that she accepts his language and that he may continue to use it with his family and friends. Children are quick to sense it if the teacher rejects his language. Such rejection by the teacher can only serve as a barrier to communication between teacher and pupil. However, along with the acceptance of the child's language, it is important that the teacher helps the child see that if he is to participate successfully in various aspects of his daily life, he must learn to use standard English in certain situations. The teacher who approaches the use of the languages or dialects in this way will find children with attitudes more conducive to learning to use standard English.

It is important for the teacher of educationally disadvantaged children to make special efforts to help the children feel secure and to build positive feelings about school within them. She should help each child feel that school is a pleasant place where there are a variety of interesting things to do and learn; where the teacher is a friend who can be depended upon for understanding, help, and encouragement; where he is considered an important individual; and where he can live happily and comfortably with others. Strong emphasis should be placed upon establishing a relationship of trust and mutual acceptance between teacher and pupil. The first step in motivating the child to learn in the school situation is to develop a bond of trust and friendship between teacher and pupil. The child who trusts and likes his teacher will learn to respect his teacher and will want to win her approval. To develop this bond of trust and friendship, the teacher must provide the children with a variety of enjoyable informal activities, such as dramatic play, storytelling, and games. She must give the child opportunities to express his feelings and to tell his own stories about his personal life or fantasies, using whatever words he knows. Free talk in an atmosphere of friendship and understanding, together with participation in singing, dancing, playing, and working with one another in the classroom can establish a bridge between the culture of the teacher and that of the disadvantaged child.

When good relationships between teacher and pupil have been established, the child will demonstrate interest in the activities and tasks to be done in school. New learnings will be given the importance and the feeling the child attaches to the teacher, and to whatever she values. The child's enthusiasm and feeling of freedom and security will be evident as he shares his experiences and knowledge and asks questions in his endeavor to gain more knowledge. Once this spark for learning is struck by the positive relationships with the teacher, the child will continue to grow not only in his language ability but in all aspects of the school curriculum. (4)

Of course, it is true that in the upper elementary grades the influence of the teacher may not be so great as it is in the lower grades. At the upper elementary level although the influence of the teacher may still be strong, the child becomes less dependent on the teacher. Other factors may have a greater influence on the child's learning. For example, peer influences are likely often to be stronger than the influence of the teacher. The child may be motivated because he wants to be recognized by his peers rather than the teacher. Thus, the teacher must also be alert to this and other factors to motivate the child to develop his ability in language as well as in the other areas of the school curriculum.

Oral Language:

Listening

Listening is a major means of learning in the elementary classroom. A study by Miriam Wilt (5) revealed that elementary school children average two and a half hours of listening in a typical school day. Because so much of the teacher's instruction is given orally, the child must be able to listen thoughtfully and critically if he is to learn effectively and profit from his school experiences.

It is especially important for the teacher of disadvantaged children to devete sufficient time to developing their listening skills because of the tendency of their homes to be non-verbally oriented and their lack of opportunities to develop these skills to any degree. When such children enter school, they often have difficulty in listening attentively to the teacher or their peers and are unable to listen critically or appreciatively as the teacher gives the pros and cons of controversial issues or shares poetry and stories with them.

Types of Listening

Various types of listening are constantly demanded in the learning experiences of the elementary classroom. The Commission on the English Curriculum has defined the types of listening as follows (6):

1. Passive or marginal listening is prevalent in the classroom as children are engrossed in an activity, such as drawing or writing, but listen just enough to be aware of comments made occasionally by the teacher. In such situations, listening is not the focus, it is marginal or passive.
2. Appreciative listening is involved when the child enjoys listening to poetry, stories, or recordings. Creative listening results when the child enters imaginatively into that about which he is listening, such as the experiences or the feelings of the characters in a story.
3. Attentive listening takes place when the listener seeks to comprehend accurately what is heard, as when he tries to select specific items of importance in directions, announcements, and introductions or when he follows carefully the sequence of ideas of a speaker. Responsive listening is involved in situations in which the listener participates, as in discussion and conversation.
4. Analytical listening occurs when the hearer listens objectively to what is said, evaluates what is heard in terms of his own experiences, and attempts to determine whether the information and viewpoints of the speaker are authentic and reliable.

The Listening Skills

What are the skills the teacher must develop to help children become good listeners?

Pratt and Greene (7) have identified these skills and placed them in three main categories: 1) word perception, which involves the recall of known word meanings and the deduction of meanings of unknown words from the context of the speaker; 2) comprehension of ideas, which involves the ability to note details, to follow directions, to organize what is heard into main and subordinate ideas, to select pertinent facts on a particular topic, and to detect clues in the speech that point to the importance of certain ideas and words; and 3) use of ideas to build understandings, which involves relating previous knowledge to facts or ideas which are presented and making inferences that can be justified on the basis of the facts that are presented.

Techniques and Activities for Developing Listening Skills:

What can the teacher of disadvantaged children provide her class in order to build their ability to listen effectively? How can she help the children to develop good listening habits?

First, the teacher must make the children aware of the importance of skillful listening in their daily lives. She should discuss the need for effective listening in order to enjoy such experiences in one's daily life as radio and television programs, motion pictures, music activities, dramatic activities, recordings of various kinds, the conversation of others, telephone conversations, and discussions. She should help the children see that the formation of good listening habits are easily learned, and that once they have mastered the necessary skills they will be able to have a richer and more meaningful life. Early in the school year she should set up with the children standards that they should follow for effective listening in various kinds of situations. The list of standards may be used as a check list to evaluate the children's growth in listening ability as the year progresses.

Because the disadvantaged child's home environment may be such that he has developed bad listening habits, such as learning inattention to the sounds of one's environment because of the noise which generally prevails due to overcrowding, the teacher must begin at once to stimulate the child's auditory acuity, or sense of hearing.

The following activities may be used to develop an appreciation of the sense of hearing and help children become more aware of the sounds which occur around them:

1. Have the pupils list all the sounds they hear to and from school or on the playground. Have them recall all the sounds they can remember hearing on various trips they have taken, such as visits to the zoo, the dairy, the fire station, or the airport. The teacher might write each of the sounds on the board as the children name the various sounds.
2. Have the children make individual lists of the sounds they enjoy and also lists of the sounds which they find unpleasant.
3. Ask the children to close their eyes. Make sounds with various objects, such as coins, pins, pencils, paper, a pair of scissors, and a glass, and have the pupils guess the object which was used to make each of the sounds.
4. Have the children sit quietly in the classroom for a few minutes and list all the sounds which they hear during that period of time, such as a car passing, people's footsteps, a dog barking, someone sneezing, or a door slamming.
5. Have the children tell a story by having each pupil contribute a sentence with a sound mentioned in it. After each pupil contributes his sentence, he calls on another pupil to contribute a sentence to the story. The title of the story may be "The Cave of Mysterious Sounds," "A Trip to the Zoo on the Planet Mars," or "The Town of Noisy People." The children may select their own title for the story.
6. Read stories or poems in which there are various sounds, such as that of engines, animals, water, wind, and rain. Have the pupils repeat the words or phrases used to create the illusion of the sounds.
7. Have the children watch and listen to a sound film. Tell them to be ready to ask questions about the important points of the film after it is shown.

The tape recorder can be used very effectively in developing the pupils' listening ability. It could be used in a variety of activities.

1. Familiar sounds can be tape recorded and then played back to the children. Have them guess what produced each sound. The sounds may be made by clapping one's hands, ringing a doorbell, knocking on a door, sharpening a pencil, washing a glass, starting a car, and walking on the concrete pavement.
2. The children's conversation and discussion periods may be recorded. Then they may listen to what they have said and discuss what aspects of the periods were interesting and worthwhile and what aspects could be improved in future sessions.
3. Have the children listen to some short stories that have been tape recorded. Ask them to list all action words or descriptive words that added interest to the stories.
4. Have the children listen to the tape recording of a story. Stop the recorder before the story ends. Have various pupils tell how they think the story will end. Then play the remainder of the recording.
5. Tape record reports of the children about various topics as they share them with class members. Have members of the class tell what they learned from the oral reports of individual children. Then play the recording to see if important points of the reports were remembered.
6. Poetry and stories may be tape recorded and then played to the children. Questions about the characters, the sequence of the story or poem, and specific incidents in the story or poem may than be asked and discussed with the pupils. On occasion the pupils may be asked to listen for definite things before the tape is played.

Listening centers may be set up in elementary classrooms so that some of the listening activities with the tape recorder can be carried on with some privacy and without disturbing the other members of the class. A listening center is an audio device which usually consists of eight or more sets of earphones or headphones, each of which can be plugged individually into the listening center to enable the children to hear the tape recordings. Such listening centers may be used by the children when the teacher is doing group work with other members of the class or whenever the child has free time during the school day.

There are many other opportunities for meaningful listening in the usual school program. The teacher's responsibility is to see that the pupils are helped to adapt the kind of listening they do to that which will best serve the purpose of the activity.

Some of the activities that may be done under teacher guidance are as follows:

1. Listening to Stories and Poetry. Story telling by the teacher or pupils gives the children opportunities to listen appreciatively. Throughout his elementary school years there are many occasions

when the child listens to stories. The teacher should guide the pupils in learning to respond to the stories by enjoying the plot and reacting to the mood, creating visual images of the action described, and interpreting the feelings, motivations, and behavior of the characters.

Pupils from disadvantaged homes may lack interest in listening to stories because their parents may not have read to them at home. To stimulate interest in listening to stories, the teacher of primary grade children may tape record stories related to the school experiences of the children. The stories may then be listened to individually at the listening center.

Stories read to primary grade children who may have difficulty in listening attentively should permit participation on the part of the children. Such books as Wanda Gag's Millions of Cats and Marjorie Flacks's Ask Mr. Bear are excellent for this purpose. The children may join the teacher in saying the repetitive phrases or sentences as the stories are read.

To motivate disadvantaged children's interest in listening attentively to stories and to help them more readily identify with the characters in a story read to them, early in the school year the teacher might select for oral reading stories of children with cultural backgrounds similar to theirs. For example, Negro children would be responsive to such stories as Ezra Keats' The Snowy Day and Whistle for Willie, Georgene Faulkner and Jonn Becker's Melinday's Medal, for Mebane Burgwyn's Lucky Mischief.

When the children listen to poetry, they should be guided to listen imaginatively by visualizing the vivid word pictures and assimilating the ideas and feelings of the author.*

Activities such as the following will help children to learn to listen more appreciatively and creatively:

a. Have the children do a spontaneous dramatization of a story or poem read to them.
b. Have the children express in pantomime poetry that is read or re-read to them.
c. Have the children write original endings to a story that is read to them.
d. Have the children draw pictures for the "television showing" of a story or poem that was read to them.

2. Conversation. Conversation is the form of oral communication that is most frequently used by children and adults. Disadvantaged children in all likelihood have little practice in participating in conversations at home. Therefore, before guiding a conversation

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* After reading such poems as "White Season", by Francis Frost, "Firefly," by Elizabeth Madox Roberts, and "Stopping by the Woods on a Snowy Evening," by Robert Frost, the teacher may discuss with the children the images they saw as the poems were read because of the vivid descriptive words used by the authors.

period in the classroom, the teacher must discuss the importance of listening courteously during a conversation. She should explain that the courteous listener is attentive to the thoughts expressed by the speaker and shows his interest by asking stimulating questions and making pertinent remarks. Standards should be set up with children for courteous listening.

The more reticent pupil will be encouraged to participate in the conversations in the classroom if the class members and the teacher listen attentively to what he says, showing him that his comments are worthwhile and of interest to them. When conversational skills are being developed, it would be wise to keep the group of participating conversationalists small at first in order to get maximum participation from the children involved. The teacher should also stress that a good conversationalist selects a topic of interest to all participants. In the beginning topics selected for conversations in class may be concerned with stimulating activities that the children have experienced first hand with one another in the classroom. Evaluation of class conversations should include pupil self evaluation by using the list of standards set for courteous listening established with the children.

3. **Discussion.** Discussion is a valuable activity in the classroom because it is the means for listening in all the subject areas. Through discussions children gain knowledge that clarifies their thinking and leads them to new ideas and new understandings. It gives them the opportunity to learn to think critically and to form reasonable judgments.

   If children are to profit from discussion periods, they must realize the importance of attentive listening during discussions. A discussion centers on a definite problem or topic. The teacher should guide the pupil to feel responsible for knowing what topic or problem is being considered, to follow the thread of thought, to be ready with a worthwhile contribution, and to listen critically to what is said by others. Evaluation of discussion periods should include pupil self-evaluation according to standards set for attentive and analytical listening that had been established with the children under teacher guidance.

4. **Reports.** Oral reporting is done primarily in the middle and upper elementary grades. However, even the primary grade child may report on his personal experiences, such as a family trip to the zoo or the care he gives to his pet puppy. Oral reports are often given as part of social studies or science lessons in the classroom. As a report is being presented by a child to the class, the pupils must listen attentively and critically by selecting information that supplements knowledge they already have. They must evaluate the authenticity of what they hear and ask pertinent questions to clarify important points related to the topic being reported.

The school situation calls for much listening. If pupils are to profit from their school experience, they must develop their listening skills. Therefore, the teacher of disadvantaged children must help them realize the importance of developing their listening ability and make special efforts to help the pupils form good listening habits.

Speaking:

It is through speaking that the child does most of his communication with others in his daily life. If the child is to convey his ideas and his feelings to others in the classroom situation, he must be able to express himself effectively.

Disadvantaged children frequently are unable to verbalize either their ideas or feelings bacause of lack of practice in speaking in the home. The scarcity of objects in the home and the tendency for the child to be restricted to the depressed environment of his home and his immediate neighborhood contribute to his being deficient in both knowledge of concepts and vocabulary. Also, frequently another language or dialect of English is spoken in the home which is at considerable variance with standard regional dialects of American English. Therefore, the teacher of disadvantaged children must provide activities that will familiarize the pupils with the speech sounds and syntactical structure of standard English, build their concepts and vocabulary, and give them opportunities for oral expression and practice in a variety of situations.

Speech Sounds and Syntax

Because children tend to acquire the speech sounds of their parents and others with whom they come into contact, disadvantaged children often enter school handicapped in their ability to articulate, enunciate, and pronounce the sounds of standard English in words and phrases used in their oral communication. The tendency for brevity and simplicity of language used in the home results in lack of knowledge of the syntactical regularities of standard English and difficulties in comprehension of and expression in oral language.

The teacher of children who speaks a language or dialect other than standard English should learn the linguistic facts of the non-English language or substandard dialect of English spoken by the pupils. Particularly, he should examine the nature of any consonant or vowel sounds or any phonetic combinations which are not used in standard English. He will find it valuable to study diagrams showing how the positions of the tongue and lips differ for the formation of specific phonemes in other languages or dialects. A resource speaker who speaks the non-English language or substandard dialect of English and knows the differences and similarities of such language or dialect to standard English may be invited to a school faculty meeting to speak to the teachers to inform them of aspects with which they should be familiar if they are to help the diadvantaged children express themselves effectively in oral communication. Films may be viewed by the teacher to acquire additional linguistic information needed. With the linguistic information gained, a teacher knows which standard English phonetic items are difficult for the children with whom he works. He also knows the word order and sentence patterns of the other language or dialect, where the accents occur in words, phrases, and sentences, and how the speaker's voice rises and falls. The teacher with such linguistic knowledge can think in terms of comparative language or dialect-sounds, placement of tongue and lips, grammatical structure, and phrasal idioms. It is important that the non-English language or substandard dialect be treated respectfully. The teacher should help the child realize that there are times and places when the non-English language or substandard dialect may be used, such as at home or with his friends in the neighborhood, and that there are times and places when standard English should be used, such as in the school situation or in talking with others who use standard English.

The following activities may be used by the teacher to develop the children's ability in using correct speech sounds in oral expression and in acquiring knowledge of the syntactical structure of standard English:

1. Tape record lists of words with the sounds with which the pupils are having difficulty. The recording should give the pupils opportunity to repeat each word after it has been pronounced. The tape recording should be used only under teacher guidance until the teacher is certain that the pupil can make the sound correctly. Then the pupil may use the tape for independent practice..

2. When the pupils are able to pronounce correctly the words with the sounds with which they had had difficulty, tape record sentences containing many words with the sounds with which the pupils need practice. Again, the tape should be used under teacher guidance until the pupils can make the sounds correctly in sentences. Then it may be used for independent practice by the pupils.

3. The classroom may have a tape recording activity center. Each day a different activity may be described on a 5 x 8 card. For example, the pupils may be asked to think of five words with a particular sound in it, such as the short i sounds, and also think of five sentences, each of which contains a word with the same sound. Of course, the sound selected would be one with which the pupils need practice. The pupils would have been instructed how to use the tape recorder by the teacher. The pupils may go to the center during their free time to execute the activity described for the day or week. Each pupil says his name before doing the activity so that the teacher will be able to evaluate the performances of individual pupils.

4. Have the pupils make individual booklets with pictures of words containing specific sounds with which they need practice. For example, if they have a tendency to omit the final s sound from words, they may have a page in their booklets devoted to pictures for words with a final s. Have the pupils label their pictures and take turns with classmates during their free time naming the pictures to gain oral practice with the sound.

5. Tape record some of the children's favorite stories to familiarize them with the syntactical regularities of standard English. If there are filmstrips available for the stories, they may be viewed as the recording is played.

6. The teacher may verbalize some of the children's first-hand experiences during or after the experiences. Then she may tape record stories of the experiences for individual listening. The stories may also be duplicated in the form of a booklet, with blank pages included for the children's own illustrations. The illustrations may serve as contextual clues as the pupils read the story independently or to each other. These story booklets may be taken home by the child who may read the story to his parents or have the story read to him by his parent.

7. Have each child make sets of cards with words and phrases that form sentences. Use different colored paper for each sentence so that the cards will not be placed in the wrong sets. When not in use, put a rubber band around each set to keep the sets separate. When the color of a set is called, the pupils are to arrange the words and phrases to form a sentence which is the best way to express the thought. The pupil who completes the task first reads the sentence orally to the class. If the arrangement of the sentence is not the best, another pupil will be called to read his arrangement. This is continued until the best one is read. Then the whole class reads the sentence orally. For example, one set of cards may contain the following words and phrases: bought, that, Ellen, for you, present. The children may arrange the cards in these ways:

   a. That present Ellen bought for you.
   b. Ellen bought for you that present.
   c. Ellen bought that present for you.

   The pupils who placed the cards in the last arrangement would be correct because that is the best way to arrange the sentence.

8. A list of words which belong in different parts of speech is put on the board. Then the teacher reads various incomplete sentences to the pupils with words omitted in different parts of the sentences. The pupils are asked to select the word which best completes each sentence. For example, words listed may include: biggest, walks, quietly, for. Incomplete sentences read by the teacher may include:

   a. Jack ____________ to school everyday.
   b. I bought this ice cream cone ________ you.
   c. He ate the _________ piece of pie.
   d. Mary spoke _____________ because her baby sister was sleeping.

Concept and Vocabulary Building

Deficiencies in the disadvantaged child's repertoire of concepts and vocabulary result because of the scarcity of objects and books in the child's home, the lack of a variety of experiences because the child tends to be restricted to his immediate neighborhood, and the fact that different labels may have been learned for specific concepts and in some cases no labels learned because of the infrequency of verbal interaction in the home. The teacher of such children must utilize a variety of visual materials and provide many direct experiences in order to build their knowledge in these areas.

Direct experience is the chief source and means of vocabulary and concept development. It is from the materials of direct experience that the child develops clear and accurate meanings and concepts by sensing the relationship between verbal symbols and experience. Therefore, the child who has a poor speaking vocabulary should be given the opportunity to examine and manipulate various materials, including tools, toys, objects, specimens, and models, in the classroom.

Specific vocabulary lists may be developed by classroom teachers to guide them in building the vocabulary and concepts of such children. The Dolch list of "Basic Sight Vocabulary of 220 Words" may be used along with additional lists consisting of names of foods, animals, parts of the body, types of clothing, words relating to the home, school, and neighborhood environments, and other frequently used words and phrases, such as hello, excuse me, lunch, and shut.

Various methods must be used to help the child become familiar with the words and their meanings.

1. The teacher may show an object, name it, and have the pupils repeat the name of the object. This procedure may be included as part of a game. A "surprise box" may contain a number of objects. A child may be called upon to select an object from the box. As he does so, the teacher would name the object selected, the child would repeat it, and then the whole class would pronounce it. Eventually the child and class would name the object by using a sentence, such as "I have a red book in my hand" or "This is a red book." At times the child may be asked to do something with the object by the teacher or another pupil. After following the instruction, the child would verbalize his action to the rest of the group. At other times, the child may perform an act of his own thinking and call on another pupil to describe his action. If the child called upon does it accurately, he is given the opportunity to perform an act with the same object and call on another pupil to describe his action. The teacher would permit this procedure to continue until he feels that the pupils have learned the word being taught and have gained an understanding of its meaning by seeing it, feeling it, using it, playing with it, hearing it, smelling it, tasting it, or doing any other action that would extend the meaning of the word.

2. Words that cannot be visualized as specific objects may be dramatized with the use of various materials to convey their meanings. For example, verbs and prepositions, such as walk, eat, in, and on may be dramatized by the teacher to develop their meanings. For each word she may dramatize such sentences as:

a. See me walk to the door.
b. I like to eat apples.
c. I put the ball in the box.
d. I put the pencil on the table.

She should dramatize several sentences for each of the words to be sure the children understand its meaning. After the dramatization of each word, pupils may be called upon to follow specific directions with the word to show their understanding of it. Each child should verbalize his action after the performance of the act. To check on the pupils' understanding of each word and to extend its meaning, individual pupils or small groups of pupils may dramatize the meaning of each word in various ways of their own and call on specific pupils to verbalize their performances.

3. The teacher may use simple stick figure illustrations, pictures, recordings, slides, films, filmstrips, diagrams, charts and books to further extend the meaning and understanding of each word. The pupils themselves may be asked to make an illustration for each new word or phrase that is taught and to put them together into booklet form. This could be used as an evaluative device by the teacher to check the pupil's understanding of each word.

4. Another technique to check the pupils' understanding of each word taught is to ask questions which require answers that would show the pupils' knowledge or lack of knowledge of the word. Pupils should answer the questions orally in complete sentences. Questions such as the following may be used:

   a. What does Jim have on his desk?
   b. Do you walk to school?
   c. Who sits between Linda and Peter?

   Replies such as the following may be given by the pupils to the preceding questions:

   a. Jim has a pencil on his desk.
   b. Yes, I walk to school every morning.
   c. Juanita sits between Linda and Peter.

5. The teacher may provide conversation and discussion periods in which the pupils are encouraged to use the new vocabulary and concepts learned. For example, after the word and concept of water has been taught, the pupils may have a discussion of the importance of water to their daily lives, the various forms of water, and the various ways in which we utilize water. Such a discussion period would do much in extending the pupils' understanding of the word and give them the opportunity to gain verbal practice with the word.

6. After understanding of the word is developed, the child should be given opportunities to read the word in various contexts and situations. In the beginning chart stories developed with the pupils may be used. The children may also write original stories

individually using the new word or words learned. These stories may be shared orally and then put into booklet form for the class to enjoy at their leisure. The teacher should also place in the classroom library books at the children's reading level in which the words and concepts are featured.

APPENDIX A.

Checklists of Standards for Good Listening

Am I a Good Listener?
Third Grade

1. Do I look at the person who is speaking?
2. Does the expression on my face show my interest in what the speaker is saying?
3. Do I think of what the speaker is saying as he expresses his ideas or feelings?
4. Do I listen the first time something is said so that the speaker will not have to say it again?
5. Am I ready to discuss or ask questions about what I have heard?

Our Checklist for Good Listening
Sixth Grade

1. Do I give my full attention to the speaker?
2. Does my facial expression show my interest in what the speaker is saying?
3. Do I ignore the individual who talks to me while another person is speaking?
4. Do I ask questions to obtain more information on certain points or to clarify a point?
5. Do I take notes on informational material?
6. Do I compare what I hear to what I already know about the subject?
7. Do I follow the sequence of ideas being expressed?
8. Do I grasp the theme and main points of the speaker?
9. Am I aware of contradictions, unsubstantiated statements, or evidence of prejudice made by the speaker?
10. Do I reserve judgment in listening to different viewpoints on a subject?

Experiences out of the classroom should also be provided by the teacher to develop the children's concepts and vocabulary. The children may go on field trips by walking to places of interest in the neighborhood or taking bus trips to more distant places in the community where animals, objects, and processes unfamiliar to the children may be observed. Trips that may be of value in the immediate neighborhood include walks to see changes in the season, homes or business establishments being built, soil erosion, a modern supermarket, operation of digging or lifting machines, and a nearby fire station. Other places in the community that may enrich the children's concepts and vocabulary include the airport, post office, library, newspaper printing facilities, bakery, harbor, police station, museum, aquarium, dairy, factories, telephone exchange, and observatory. However, in order for these first-hand experiences to be effective in building concepts and vocabulary, the teacher must prepare the children for the experience, the vocabulary and concepts must be connected to the experience, and the vocabulary and concepts must be utilized in discussion and possibly in writing after the experience. In preliminary discussions of the trip to be taken, the teacher should guide the children concerning important aspects of the trip to be observed so that they may become more critical observers of their environment. Discussions should be held about what the children want to find out on the trip and what they might ask the guide, as well as what they would look for. Following the field trip the teacher should guide the children in evaluating the extent to which the purposes of the trip were achieved. They might discuss whether or not they accomplished what they set out to do, whether they found the answers to their questions, what knowledge or information they gained that they had not known before, and what other things they would like to find out about.

Activities to Encourage and Provide Practice in Oral Expression:

The disadvantaged child may be hesitant in expressing himself orally in the classroom situation because his home may be nonverbally oriented or he may speak a language other than English or a substandard dialect of English at home. Therefore, he may lack the skills needed to communicate his ideas and feelings in the classroom and may also lack confidence in his ability to express himself in standard English. In order for him to develop the skills needed for effective oral communication and to develop self confidence in his ability to verbalize in standard English, he must be given many opportunities for oral expression in the classroom. The teacher will find numerous occasions in the course of a school day to provide the child with such oral language situations as conversation, discussion, storytelling, telephoning, dramatization, reporting, giving announcements, directions, and explanations, and choral speaking.

1. Conversation. When conversations are first carried on in the classroom under the guidance of the teacher, the main purpose of such periods should be to help each child feel comfortable and create within him the desire and the willingness to engage in the conversations. The hesitancy, the fear of expressing himself orally, must disappear and in its place must come a feeling of confidence and

enjoyment in participation.

When the children have reached the point where they are able to converse naturally and spontaneously with one another about matters of common interest, the teacher might guide the children gradually in improving their quality of expression and help them to recognize the areas in which they need improvement. She might help the children see the need to select a topic of interest to all participants in the conversation. She might emphasize that good topics should give participants the opportunity to express personal feelings and experiences. In or out of school experiences may be selected as topics of conversation. Social studies or science units being carried on in school, local events in the community, books, motion picture films, sports activities, television programs, and pets are topics that may stimulate interesting conversations.

Other skills to be developed include sticking to the subject, using a variety of sentence constructions, using pleasing and descriptive vocabulary, enunciating clearly, knowing when it is and when it is not appropriate to talk, being sensitive to the feelings of others by showing consideration for others while the conversation is being carried on, speaking in a pleasant and interesting tone of voice, and being able to change the topic of conversation tactfully.

2. Discussion. Discussion is the form of oral expression that is used most frequently in the classroom for carrying on learning. It is the means for children to gain information, to deal with facts and solve problems, and to express their ideas and opinions and share their knowledge.

There are many occasions in the classroom when problems arise that need to be solved. The teacher should guide the pupils in seeing their problem clearly so they can work toward a solution of the problem. As the pupils progress through the grades, they should assume greater responsibility for defining and setting up the problem to be solved. In order to gain as much pupil participation in discussions as possible, in addition to having a purpose which is clear to each pupil, the topic being discussed should be one that is real and meaningful. It should be of interest to him, it should be within the ranges of his experience, and he should realize the importance of the problem. For disadvantaged children, early in the school year it would be helpful to discuss problems which would be followed up by action so that the pupils can see their ideas and suggestions for solving the problem actually being applied. Such activities as planning a program for parents, planning a classroom party, or publishing a school newspaper would necessitate many discussions for achieving the children's goals.

In guiding discussions, the teacher should help the pupils develop their skills in staying on the topic being discussed, expressing disagreement in a tactful manner, forming independent judgments based on the facts and knowledge available, making worthwhile contributions which are accurate and supported with facts, raising questions that are pertinent and asking for explanations freely, avoiding repetition of what has been said through careful listening, taking turns in speaking, and listening courteously while others speak.

3. Storytelling. Storytelling is a means for children to share their personal experiences, to share original stories, and to share stories they have read or heard.

Before children are able to tell stories effectively so that others may enjoy them, they must have many experiences in listening to stories, reading a variety of books, and doing things and going to places of interest. Since children from disadvantaged homes may be lacking in experiences in all these areas, it is especially important that the teacher of such children provide them with suitable activities to fill the void.

With disadvantaged children, it would probably be best to have them begin by telling stories of their personal experiences at school or at home. Following a field trip by the class, each pupil may tell about what he considered to be the most interesting part of the trip. Each pupil's contribution may be taped and later typed and put together into booklet form. Later, when the children are confident and find enjoyment in sharing their experiences, they may be encouraged to share stories they've enjoyed reading, hearing, or creating on their own.

Through storytelling the children will develop their abilities in enunciating clearly, expressing ideas in sequence and using voice to convey mood and meaning, speaking in a poised, natural, and animated manner, enriching their vocabularies by using new words and meanings, and learning to appreciate and enjoy the experiences and original thoughts of others.

4. Telephoning. Learning to use a telephone properly is a skill which should be developed because of the importance of the telephone as a medium of communication in everyday life. Children use the telephone to converse with friends and relatives, to call the police, fire department, or doctor in emergencies, to receive messages for other members of the family, or to order groceries or other supplies for their parents.

The use of a toy or model telephone to carry on typical imaginary conversations is an excellent means to stimulate children to forget their shyness and self-consciousness and express themselves spontaneously and freely. The children may follow up on what they learn in school by making calls at home and reporting their experiences to the class. The class may then evaluate the good and poor points of the calls made, suggest how they could be improved, and then apply suggestions made in dramatizations of the calls.

Skills and attitudes to be developed in teaching the use of the telephone include the following: (1) speaking clearly and distinctly in a pleasant tone of voice, (2) formulating the message, inquiry, or order concisely before making the call, (3) identifying oneself clearly and courteously when making or answering a call, (4) stating clearly and courteously the purpose of a call that is made, and (5) allowing the caller to close the conversation.

Additional telephoning techniques that must be learned are making long distance and emergency calls, getting the operator, and using different sections of the directory to find numbers wanted as quickly as possible.

5. Dramatization. Children seem to have an innate tendency to dramatize. In early childhood they love to imitate older people and their activities. Through such activities the child identifies with other prople and interprets their actions. In so doing he furthers his learning of language by experimenting with new words, new ideas, and new ways of doing and saying things. He gains a richer and deeper understanding of the world about him, experience in using his imagination and creative ability, and greater facility in expressing his feelings, in phrasing and ordering his sentences, and in using a more vivid and expressive speaking vocabulary. By observing the spontaneous dramatic activities of the preschool or primary grade child, the teacher is able to gain a better knowledge of the past experiences of the child and of his understanding, skills, and attitudes.

Because disadvantaged children may be less verbal in dramatic situations, the teacher may need to participate actively in these activities by playing various roles and making comments that will stimulate more oral expression by the children. For example, the children may be preparing a meal in a particular situation with no one doing any speaking. The teacher might then knock on the door and be an unexpected guest at the home. As a guest at the meal, she might comment on the delicious food, ask questions about who prepared the meal and about some of the current activities of the members of the family in the play situation. As the children begin to express themselves more freely, the teacher will participate less and less in their dramatic activities.

As the child grows older and gains more interests and experiences, the dramatization which he engages in is likely to be more complex. There is a steady progression from individual, spontaneous play to planned and more organized group play. He will seek new facts, information, and materials to enrich his dramatization and gain new relationships and new understandings.

Skills which the teacher should develop as she guides the children in dramatic activities include the following: (1) speaking clearly and expressively, (2) speaking with sufficient volume so that one may be easily heard by the audience, (3) working cooperatively with others in achieving a common goal, (4) showing consideration and appreciation for the ideas and needs of others, (5) using words effectively and correctly in sentence form, and (6) feeling the part of the character and employing the tone and mood of the character portrayed.

6. Reporting. In the primary grades oral reports are given informally and spontaneously by the children as they share information or knowledge gained through personal or vicarious experiences. As the children progress through the middle and upper elementary grades they should learn how to give planned reports. Such reports may be about books or stories they've enjoyed reading, individual or group science experiments, committee work, social studies or science topics of interest, or trips taken with the family. For these reports the child would select and organize information according to the purpose of his report and include some of his own interpretation of the ideas gained. To help the child stick to the topic of his report, he should have specific questions in mind which his report is to answer. A child who is to give an oral report in class should be led to feel that he is making an important contribution to the group.

   If a child seems to be generally disinterested in school activities but seems to have a strong interest on a particular topic, the teacher may encourage him to gather information on the topic and share it with his classmates with an oral report accompanied by appropriate visual aids done by the child. A project of this kind can give the child the recognition he needs, help him feel an important part of the group, and be a motivating force in getting the child interested in other school activities as well.

   Skills that the children should develop in planning and giving an oral report include: (1) selecting a specific topic, problem, or question that the child and his classmates want to know more about, (2) planning and presenting the report in an interesting way by using charts, pictures, books, diagrams, and other visual materials, (3) keeping the topic in mind as he gathers information on the topic, (4) telling the facts in good order so that the report is meaningful and can be fully comprehended by his classmates, (5) speaking distinctly and expressively in good sentence form, and (6) evaluating the report in terms of its interest, organization, choice of words and sentence structure, and usefulness to the group.

7. Giving announcements, directions, and explanations. Children frequently find the need to make announcements and give directions and explanations in their school and life situations throughout the day. Announcements are made by children about school or class programs, lost and found items, meetings, games, or exhibits. Children find the need to give directions or explanations for playing games, constructing various projects, putting on a play, or telling how a particular event occurred.

   The skills which the children need to develop for making announcements and giving directions and explanations effectively include: (1) organizing all ideas clearly and concisely, (2) providing all essential information as to who, what, when, where, and how, (3) using appropriate vocabulary and sentence structure, (5) speaking distinctly so that everyone can hear easily, and (6) repeating important information regarding what, where, and when at the end for emphasis.

8. Choral speaking. In working with disadvantaged children, the teacher may find a number who may be generally hesitant in expressing themselves orally. The use of choral speaking is an excellent way to get the children to gradually begin to be more relaxed and comfortable in speaking before others. Other values of choral speaking include the following: (1) it helps children enjoy the rhythm, mood, and meaning of poetry and prose, (2) it teaches the children to listen and to think creatively as they interpret words and word patterns, (3) it encourages the understanding, memorization, and appreciation of children's literature, and (4) it leads to the improvement of the children's speech. Specific speaking skills that the teacher should help the children develop are: clear enunciation and correct pronunciation, rich and full tonal quality, and flexibility of voice.

Children who have had rich and varied experiences in listening to literature read by the teacher will readily and enthusiastically participate in choral speaking. In the preschool and primary grade years, the children find enjoyment in joining the teacher in saying rhyming and repetitive phrases or sentences of stories and poems, including nursery rhymes. From this background the children can be led easily into actual choral speaking.

Techniques that will help to make the choral speaking experiences enjoyable and worthwhile include the following:

(1) Chose material carefully, considering such factors as the interests and intellectual and emotional level of the children and selecting only those peoms which have rhythm, a universal theme or group sentiment, and literary value.

(2) Interpret the poem fully so children grasp its mood and meaning, discussing such questions as: What is the poem about? Does it make you feel happy, sad, excited? What pictures do you see in your mind? What sounds or descriptive words are used to make pictures? What part is the most exciting or interesting? Which of your five senses are appealed to and how? Why do you think the poem was written?

(3) Discuss various ways in which the poem may be said. Which lines should be said quickly or slowly? softly or loudly? Which parts should be said by all voices? by a few voices? by light voices? heavy voices? medium voices? Arrangements using different types of voice quality would probably not be possible until the upper elementary grades. After discussing and trying out various arrangements, both teacher and children may evaluate their efforts and make suggestions for varying or improving the arrangements until they are satisfied

with the outcome. Then the children may repeat the selection for enjoyment.

The following types of arrangement may be used in the choral speaking of a selection (8):

a. Refrain--a child reads the narrative, with the whole class joining in on the refrain.
b. Antiphonal or two part--two balanced groups are used, one against the other; boys versus girls, light voices versus heavy voices.
c. Sequential or line-a-child--a few individuals interpret a line or two at a time, leading up to a climax with the whole class joining in.
d. Part arrangement--voices of various types of quality are grouped as in a singing choir.
e. Unison--all voices are used to speak all lines at the same time.

If disadvantaged children are to communicate their ideas and feelings to others in their everyday life and if they are to be successful and contributing members in the school situation, they must learn to speak effectively in standard English. Therefore, the teacher of such children must be aware of the oral language skills she must help the children develop under her guidance and provide frequent and continuous opportunities for oral expression.

Written Language:
Written Composition

In the kindergarten and first grade emphasis in language arts instruction is placed on oral work, but the children are prepared for beginning written work. The children engage in cooperative writing experiences such as dictating thank you messages, invitations, and stories for experience charts. Gradually as the children gain experience in copying simple communication, engage in simple writing activities, such as putting their names and captions on pictures, and make progress in spelling and handwriting, they begin to do some individual writing and grow in their ability to use written language as a means of communication.

Practical Writing:

While perhaps all original writing by children is creative, in a sense, there are some kinds of writing activities which are done primarily for practical purposes. These activities include writing letters and making reports. The children need to develop skill in these areas if they are to communicate effectively in daily situations in and out of school.

With disadvantaged children who may find it difficult to express themselves, letter writing and reporting are excellent means to start them in written expression because of the definite and practical purpose for the activities. Thus, the pupils will be able more readily to see and feel the need to participate in these language activities.

Writing Letters.

Letter writing is the form of written expression that is most frequently used in daily life. Therefore, sufficient time should be devoted to instruction in this phase of written language.

1. Friendly letters. There are numerous occasions when children feel that they want to communicate with someone whom they are unable to speak to personally because of the distance between them. Therefore, there are many real and natural situations that the teacher might use to stimulate them in letter writing.

The following are some situations for which the children might desire to write a friendly letter:

(1) Inviting parents to a school or class program
(2) Writing to a classmate who is absent from class because of illness
(3) Writing to a former classmate or a former teacher who has moved to another state or country
(4) Corresponding with a child in another country or another part of the United States
(5) Writing to a relative
(6) Thanking a resource speaker who has visited the class and shared his experiences and knowledge
(7) Asking permission to visit a place of interest on a class field trip
(8) Thanking a guide or bus driver on a field trip

In the early primary grades when the children feel the need to write a letter, the children may compose and dictate the letter as the teacher writes their sentences on the board for the children to copy. After the children have copied the letter from the board, each child may draw a picture related to the context of the letter. This will help to individualize each letter. If all letters are to be sent to the same person, although the wording on each letter is the same, all letters may be sent in a large envelope so each child will feel his efforts have been worthwhile. The receiver will enjoy each letter sent because of the original pictorial interpretation of the letter. When children write letters in class, all letters should be sent whenever possible. If each child feels his letter will be sent, he will probably be more highly motivated to do his best. With disadvantaged children, this point is probably of more importance to each child. Seemingly minor things like this may be an important influencing factor on the child's self concept.

One of the aims of the teacher in teaching letter writing is to help the children develop a positive attitude toward the writing of letters. Too many people regard letter writing as a chore when it should really be a pleasurable experience to communicate with friends. A teacher who is able to show children that it is fun to write letters will be able to get better results in her lessons.

The first aim leads to the second, that of developing in children pride and satisfaction in doing the best job they can. They should want to make their letters as interesting as possible and be concerned about the quality of their writing, the correctness of the mechanics of writing, and the appearance of the letter when it is completed.

The teacher should point out ways in which the children can make their letters interesting to the recipient. Frequently there is a tendency for the writer to make a broad general comment which tells nothing except the fact that he is busy or that he is having fun or go to the other extreme and make a list of all his activities, thus boring the reader. The children should be helped to see that it is better to write about one or two events or occurrences and elaborate on them, telling what happened, how it happened, and how the writer felt, including his opinions and his emotional reaction. Everyone enjoys a funny story so humor should be included in the letter whenever possible.

The language used in the letter should be written in the informal style of conversation. It should show concern for and interest in the person to whom it is to be sent. It should also reveal some of the actions and interests of the writer. As in good conversation, the thoughts and ideas expressed should show originality and the words and phrases used to express the thoughts and ideas should be vividly descriptive.

Some attention should be given to the mechanics of written expression. As they progress through the grades, the children should continue to improve in their ability to employ correct letter form, capitalization, punctuation, spacing, and other technical aspects of writing. The children should also strive for neatness, legibility in handwriting, and correct spelling, usage, and sentence structure. However, skill in these areas should be developed gradually through the grades and it must be remembered that it is the content or body of the letter that is most important.

The teacher may use the following procedure in teaching the children how to write a friendly letter:

(1) Use a real situation so that the children will be able to write a real letter to be sent to a real person. One of the situations previously listed may be used.

(2) Have the children examine model letters. If possible, use real letters written by children of the same age. Discuss why the content of the letters is interesting and note what standards were remembered in regards to form. Discuss the purposes of the various parts of a letter. Either the block form or the indented form are acceptable for friendly letters. However, because the block form is simpler and, therefore, probably easier to learn, it would be better that the teacher teach the block form in initial instruction on letter writing. Upper elementary children may be taught that the indented form is also acceptable but that one form should be used consistently in writing and addressing a particular letter.

(3) Have the children think about what they want to tell in their letters. Suggested topics may be listed on the board. Certain vivid and descriptive words and phrases associated with the topics suggested may be drawn out from the children to help those who may have difficulty in starting their letters. Discuss why it is better to tell about only a few things and then elaborate on them. Then permit the children to think through what they want to say. Middle and upper grade children may outline briefly the content of letters before actually writing their letters.

(4) Give the pupils sufficient time to write their letters. Emphasis should be on interesting content expressed vididly and with clarity. Expectancies in regard to the mechanics of writing should be adjusted to the maturity of the pupils.

(5) When the pupil has completed his letter, he should evaluate it by using a checklist of standards previously set up by the class. The standards should be on a chart for easy reference by the pupils when it is needed. Points to be considered in the self evaluation include: interesting content, neatness, letter form, sentence structure, usage, punctuation, capitalization, spelling, and handwriting. Reference charts showing the correct forms for a letter and for addressing an envelope would also be valuable aids for the pupil. If the teacher sees that a large number of pupils are making a specific type of error, she may present a lesson to help them overcome the difficulty. Following the lesson, the pupils may correct this particular type of error in their own papers. Examples of rather common errors may be written on the board and discussed and corrected by the pupils. Then the pupils may check their own letters and correct similar errors. Pupils making other less common types of errors may be helped individually by the teacher.

(6) If many corrections were necessary or if the content, language, and form of the letters could be improved by revision, the pupils will want to rewrite their letters before sending them. All letters should be given a final check by the teacher before they are sent. When the letters are ready for mailing, the envelopes should be addressed. Then the pupils should be shown how to fold their letters before inserting them into the envelopes. Finally the envelopes are sealed, stamps attached, and the letters sent on their way to the persons for whom they are intended.

2. Business letters. Children frequently find the need to write business letters. Some of the more common situations that arise for writing business letters include:

(1) Writing for free illustrative materials, such as pamphlets, posters, pictures, slides, and samples of products, relating to topics of study in school or of personal interest in the fields of science, health, or social studies.

(2) Ordering supplies or material needed in a school or classroom activity or individual project

(3) Ordering a book for recreational or informational purposes

(4) Asking permission and making arrangements to visit a place or interest in the community, such as a post office, police station, museum, farm, or fire station

(5) Making a request for a resource speaker to talk to the class on a topic of interest

(6) Writing letters of appreciation for services or favors rendered to the class

In writing a business letter, the children should be taught that they must be brief, pointed, and formal because businessmen are busy people and clarity and directness would save time and make possible a prompt reply. The language of business letters should be courteous in tone, and the purpose of the letter should be expressed in the opening sentence. All essential facts should be given, especially when ordering materials. In ordering supplies, an exact description of the item, the catalog number if there is one, and the cost of the item should be written accurately. The form of the business letter is similar to that of the friendly letter, but there are a few important differences that need to be pointed out to the children. The block form is generally used; however, an inside address of the person to whom the letter is to be sent should be included and certain standard salutations, such as Gentlemen and Dear Sir, and conventional closings, such as Yours truly and Cordially yours, are used. A colon is used after the salutation. Enclosures, such as checks, are mentioned in the body of the letter. A copy of all business letters should be kept for referral if necessary.

The procedure used in teaching the writing of business letters is similar to that previously described for friendly letters.

Making Reports:

The writing of a report on a topic in which the child is personally interested may serve to stimulate the disadvantaged child's interest in school activities. There are, of course, many other occasions both in and out of the classroom for which the child may make written reports. In social studies or science units of work he may make reports on information gained from books, films, pictures, interviews, and field trips. He may also write reports on science experiments, interesting books read, hobbies, school and community problems or projects, radio and television programs, and committee or club activities. The purpose of such reports would be to convey information, ideas, or opinions to others.

In guiding children in preparing written reports the teacher should discuss the importance of selecting a topic which is not too general and vague. The scope of the topic should be limited to a phase which would permit good coverage of the topic. As the children gather material on the topic they should be guided in selecting and organizing the information for the report. They will need help in note-taking and outlining of the material.

1. Note-taking. In gathering information frequently children use the exact words from the book in their reports; in many instances material which they do not understand are quoted without indicating the source of the information. The children should be asked to write their reports in their own words. Point out that notes should generally be brief and that only the important facts and main ideas should be listed. Emphasize the importance of accuracy and ask the pupils to indicate in their notes the exact source of the information.

2. Outlining. Having gathered the material, the pupil is faced with the problem of organizing the report. He will need to decide on the specific subtopics for the topic, the order in which to arrange them, and the manner in which they should be joined in logical sequence. Having the pupils outline the material can serve the purpose of making them think through the information clearly, insuring comprehension and understanding of what is important and recognition of logical relationships among the ideas.

The teacher must help the children with the outline form. Bring out the fact that the numerals and letters, the arrangement and spacing, punctuation and capitalization used are to show the relationships among the ideas.

After the material has been outlined, have the children write their reports using the outline as a guide. Before they begin writing, have them set up standards for making an interesting report. They may include:

(1) Have a good beginning and ending
(2) Stay on the topic
(3) Tell interesting and important things about the topic
(4) Add interest to the report by using vivid words and phrases, variety in sentence structure, and visual materials, such as pictures, flannel materials, diagrams, charts, bulletin board displays, or objects
(5) Check the mechanics of your written expression
(6) Read over your report and prepare for sharing the report

Creative Writing:

While all original writing by children may be considered creative, most often we think of the writing of short stories and poetry as creative writing.

There are many values to be gained in providing children with creative writing experiences. Such experiences can result in the following positive outcomes:

(1) Help children to become more sensitive to and appreciative of the meaning and beauty of their everyday world.

(2) Develop children's ability to enjoy and appreciate literature
(3) Give children the opportunity to express their feelings and ideas and frequently to release their tensions and emotions of happiness, fear, hate, anger, or jealousy
(4) Develop the ability of children in expressing themselves effectively in written expression
(5) Help children gain self-confidence and self-assurance and a feeling of security through their achievements in expressing their thoughts, ideas, and feelings

Because disadvantaged children may be hesitant in expressing their thoughts and feelings orally to others in the school situation, the use of creative writing may be an excellent means for the teacher to get the children to express themselves and, therefore, to help her get to know them and to understand them better. Frequently children who speak poorly and ineffectively can write very effectively when inspired by a vital interest that is real and meaningful to them or that has grown out of their experiences.

Prose Writing:

The following situations may stimulate children to write creatively in prose form:

(1) Give children the opportunity to tell about personal interests, experiences, and feelings, such as trips taken, hobbies, work or play experiences in the home or neighborhood, community activities, and seasonal or holiday experiences

(2) Have children write stories with historical or scientific backgrounds related to social studies or science units of study in the classroom

(3) Read the beginning of a story to the class that has sufficient interest and action to stimulate the pupils to write an ending for the story

(4) Show children a picture that stimulates them to write creatively

(5) Have the children select a historical or fictional character and write a story about a personal adventure with that individual

(6) Have the children write stories with such beginning sentences as: One of the happiest days of my life was . . ., It was a sad day when . . ., I will never forget the day when . . ., Some day I want to . . ., If I had a million dollars I would. . .

(7) Have children tell about a real or historical character whom they admire and explain why

(8) Have children write a story by defining a word, using the same approach as that of Charles Schulz in his book Happiness Is a Warm Puppy

(9) Have children write stories of school and class activities for a school or grade newspaper to be published by the class

If children are to write good stories and enjoy doing it, they must be given a variety of experiences with all types of literature, with the world of nature, and with various places, people, and things. Enriching the children's experiences will result in more enthusiasm for and originality in prose writing. Taking walking nature trips, going on field trips to places of interest in the community, and reading and listening to well written stories and poems are some of the kinds of activities that will lend to creativity in story writing on the part of the children. Because the disadvantaged child is likely to have had very limited experiences, the need for the teacher to provide him with a variety of rich experiences is imperative if the child is to express himself creatively in written expression.

In teaching prose writing, the teacher should begin by having the cooperative chalkboard story. As the children gradually acquire the skills necessary for written expression, they would start writing stories of one or two sentences independently, then proceed to the writing of a single paragraph, and eventually to the writing of a complete short story.

In handling a creative writing lesson or a series of lessons the teacher must first set up a situation that will motivate the children to express themselves. Before the children actually begin writing, the teacher should discuss the topic to be written about in order to limber up the minds of the children with ideas, thoughts, feelings, words and phrases that may be used in their stories. In addition to a discussion, showing pictures, reading stories or poems on the topic, and recalling personal experiences related to the topic will help to stir the children's imaginations, thoughts, and feelings. As the topic is discussed, some of the descriptive words and phrases may be put on the board for later reference by the children while writing.

When the children are adequately stimulated, they should proceed with the writing of the story. In writing the first draft of their stories the children should feel that it is the content that is of primary importance. They should feel that they have the freedom to create and to express their thoughts and feelings in their own way. As the children are writing, the teacher should walk around the class and give individual help to those who need it. Children in the second grade may prepare and keep alphabetized word lists in the form of individual alphebet boxes so that they are available for use whenever writing activities are carried on. In the third grade and beyond vocabulary notebooks may be kept and used during writing periods. Of course, the picture dictionary and regular dictionary will also be used considerably during these periods.

When the first draft of his story is completed, the child should read it over and evaluate it to see if he has followed the standards of good writing previously agreed upon and placed on a chart for easy reference. He would make the necessary corrections to the best of his ability in regards to such factors as clarity of expression, spelling, capitalization, punctuation, usage, and sentence structure.

In examining the children's stories, if the teacher notes that many of the children are making a particular type of error, she would present a lesson to help them overcome the difficulty. Following the lesson, the pupils would make the necessary corrections on their papers. Examples of other rather common errors may be written on the board and discussed and corrected by the pupils. Then the pupils may check their own papers and correct similar errors. Pupils making other less common types of errors may be helped individually by the teacher.

If many corrections are necessary or if the content and language of the stories could be improved by revision, the pupils may want to rewrite their stories, especially if the stories are to be put together in booklet form, displayed on the bulletin board, or taken home to be shared with family and friends.

Towards the end of the creative writing period, the teacher may have a few pupils share their stories orally with the class. The teacher must be careful that she does not ask the same pupils each time to share their stories but attempts to give various pupils the opportunity to do this. Class members may discuss what they like about each story and offer suggestions for improvement. Such discussions must be guided wisely by the teacher so that the pupil learns from the experience but at the same time is recognized for his achievement and encouraged to further growth in written expression.

Verse Writing:

There are numerous situations that may stimulate children to express themselves in poetic form:

(1) Take children on a walking trip to observe nature or people and have them write poems about things they observed
(2) Have children make a word picture in verse for a picture
(3) Have children convey their observations and feelings about such seasonal holidays as Christmas, Thanksgiving, and Easter, of special occasions like Mother's Day, Memorial Day, and Father's Day
(4) Play a musical recording and ask the children to create poetry to set to the music
(5) Have the children write verses about pets in the classroom or at home
(6) Have children write poems related to social studies or science units of work
(7) Have children write verses about a historical character whom they admire
(8) Have the children create a form of Japanese poetry called Haiku. Haiku generally consists of seventeen syllables in three lines--five syllables in the first and third lines and seven in the second line. The verse does not rhyme. The subject is always stated clearly and location, time of day, and seasons are usually either mentioned or suggested in some indirect manner. Its simplicity of word pictures about nature enables an expressive beauty. The verse is meant to be repeated many times, as each time a new mental image

is formed. A good source of information on Haiku is Harold Henderson's An Introduction to Haiku.

A creative writing lesson to create poetry may be handled in a manner similar to that described to stimulate and guide children in prose writing.

As the teacher guides children in creative writing, her primary concern should be the process through which growth is taking place rather than in the finished products themselves. She will find that if the children have positive attitudes and interest in achieving something of which they can feel pride and accomplishment, they will be motivated to continue to grow in the skills needed for good written expression.

Spelling:

The primary goal of spelling instruction is to prepare children to spell correctly the words that they need in their daily writing and the words they will use in their writing when they are adults. However, if this goal is to be achieved, there is another important goal which the teacher must strive to achieve with elementary-age children--and that is to develop a favorable attitude toward spelling. The teacher must create in each child an interest in correct spelling and a feeling of pride in being able to spell correctly the words used in his writing. Such children will recognize the importance of correct spelling and will, therefore, endeavor to spell correctly each word that they write and also learn the skills and habits that will equip them to spell new words independently.

Organization of Instruction:

Individual differences in ability to spell are as apparent as individual differences in other areas of instruction in school. Since time does not permit individual instruction of each child, the children should be grouped according to their needs and abilities. At the beginning of the school year the children may be given a diagnostic test to determine their needs and level of achievement. The teacher may use the list of basic words taught through the elementary school program and graded according to difficulty that are found in the language arts curriculum guide or teacher's manual for a spelling textbook. The two or three groups into which the class is divided should be kept flexible. As children show improvement or lack of it, they should be moved to appropriate groups so that the teacher will be able to give them the guidance they need.

Selection of Words for Instruction:

Words that the children are asked to learn to spell should be those that will be most useful to them in their writing. If a spelling textbook has been adopted for use in the classroom, the teacher should not feel he must follow the textbook word for word and page by page. Instead the teacher should eliminate words from the lists that are not useful to his class and supplement the lists with words that appear frequently and are misspelled in the children's writing but do not appear in conventional lists and also words needed in writing during other areas of instruction, such as social studies and science.

Research studies have resulted in a number of basic lists of words which it is felt that children should learn to spell. Although there is some variation in the lists, examination of these lists by the teacher will help him in selecting those words that the children should learn to spell because of their usefulness. Helpful spelling lists include those developed by Henry Rinsland (9), Edward Dolch (10), and James Fitzgerald (11).

In selecting words for his spelling groups, the teacher should remember that mastery of the most basic words should come first in the spelling program. Too frequently children who cannot spell the most commonly used words are asked to learn to spell less frequently used words.

Instructional Procedure:

Evidence to this date indicates that the test-study-test plan of instruction is the most effective approach to achieving the goals of the spelling program. The procedure that may be used is as follows:

(1) The children are tested on the words for the weekly assignment.

(2) New words for the week are presented to the class. The teacher writes one word at a time on the chalkboard and pronounces it distinctly. The children look at each word carefully and then pronounce it themselves. The meaning of any word which the children may not understand is explained, discussed, and used in a sentence. Then the syllables of each word are underlined and pronounced without division of the word. Word analysis skills and generalizations may be discussed and applied to particular words to help pupils learn to spell them.

(3) The words which are misspelled by each pupil becomes his study list for the week. Words should be studied under teacher guidance with provision of appropriate instruction and practice.

(4) A final weekly test is given to determine the words that have still not been learned by each child.

(5) Words missed on the final test are recorded by each child in his individual review word list. He is asked to study them independently.

(6) At regular intervals the children are tested on words taught and studied in previous lessons.

The following guide may be used by the children in studying a word independently after it has been developed and discussed with them:

(1) Look at the word carefully as you pronounce it correctly.

(2) Close your eyes or cover the word, and think how the word looks as you pronounce it. Be sure you know how each part of the word looks.

(3) Look at each word again to be sure that you visualized each part correctly.

(4) Write the word. Then check the accuracy of your spelling.

(5) Write the word again without having looked at it, and then check your spelling. Do this several times.

(6) Write a sentence using the word. Check the spelling of the word in the sentence.

In working with disadvantaged children who speak a subcultural dialect or a language other than English at home, the teacher must be especially careful to see that the children pronounce correctly each of the words that they are to learn to spell and that they also understand the meaning of each word. Frequently such children misspell words because they do not hear the word correctly and because they pronounce the word incorrectly in their own speech. Also, they find it difficult to learn to spell some of the words because they do not have a clear and full understanding of their meanings. Therefore, the teacher of disadvantaged children who instructs carefully on these two points will prevent many spelling errors from occurring in their written work.

Handwriting:

The primary goal of handwriting instruction is to teach the children to write legibly with ease and fluency. However, if this goal is to be achieved, another important goal which the teacher must strive to achieve in each child is a desire to write well because he realizes the importance of legible handwriting. There are various approaches which the teacher may use to motivate the child to want to have good handwriting:

(1) Be enthusiastic during handwriting instruction.
(2) Have a discussion with the children about the many needs and values of legible handwriting.
(3) Let pupils demonstrate for other children during instruction.
(4) Have pupils compare the handwriting on their assignments with handwriting scales.
(5) Have the pupils work in groups to rate specimens of work done by children.
(6) Exhibit children's work done in good handwriting in attractive ways on the bulletin boards.
(7) Have the children analyze and evaluate their own handwriting periodically and keep charts and graphs showing individual progress.
(8) Give special writing assignments to those who show marked progress or improvement, such as writing the title on the cover of a class booklet or helping to make word cards for class use.

In addition to being motivating forces for good handwriting, a number of the procedures mentioned above will give the disadvantaged child the recognition he may need or want and can help him towards developing a positive self concept. Seeing his work on the bulletin board, being selected to demonstrate his skills to others in class, and being asked by the teacher to do special assignments can help to instill a sense of pride in himself and in his own abilities.

Children need regularly scheduled handwriting periods when they are learning the basic letter forms in manuscript and again when they are learning the letter forms in cursive. Beyond that point periods for handwriting instruction may be provided only when individual needs and problems arise. The importance of using good handwriting in all written work should be emphasized in the classroom so that the children do not feel good handwriting habits and skills are to be practiced only during handwriting periods.

The children should analyze their own handwriting at regular intervals and keep individual records of their progress. Points that should be considered in the self analysis include:

(1) Legibility
(2) Letter formation (form, height, width)
(3) Slant
(4) Size (proportion)
(5) Spacing between and within words
(6) Alignment of letters (should be resting on base line)
(7) Margins and arrangement
(8) Neatness
(9) Fluency
(10) Position of hand, arm, body, or paper while writing

The opaque projector may be used to project samples of the children's work on the screen for discussion and analysis of the good and poor characteristics of the handwriting displayed.

The teacher should collect samples of the children's work regularly to analyze their needs. She should be aware of the following causes of illegible handwriting so that she can help children overcome their difficulties: (1) incorrect letter forms, (2) crowded writing, (3) too small letters, (4) uneven slant, and (5) poor alignment. If a child writes illegibly, she should check carefully the position of his hand, arm, body, and paper while writing because improper position frequently results in poor handwriting.

The teacher who has left-handed children in class must give them special help in learning to write legibly with fluency. In particular, she should check to be sure that while the left-handed child is writing in cursive, his paper is placed in a position opposite to that used by the right-handed child. In other words, the bottom right corner should be pointed at the body. For manuscript, the paper should be straight in front of the pupil, the same as for the right-handed child. It will be difficult for the child to write in an upside-down position if his paper is placed properly.

For teachers of disadvantaged children too much emphasis cannot be made about the use of sincere commendation of the improvements made by the children when they follow through on constructive criticism given to help them with their handwriting needs. Sincere praise and encouragement will inspire them to continued progress and efforts to do their best.

Capitalization and Punctuation:

Instruction in the correct use of capitalization and punctuation is most effective when it is given as the need arises. The various capitalization and punctuation skills should be brought to the children's attention during actual writing activities. For example, the pupils learn that names of persons should be capitalized when they first write their own names and that the names of months should also be capitalized when they write the dates on their assignments. Under teacher guidance, they will see as they read written material that punctuation serves to make the meaning of the material clear as well as to make the material easier to read. They may also notice that reading material aloud and being aware of the pauses that occur naturally will often help to determine where and when to use a punctuation mark.

The following suggestions may be used by the teacher in developing capitalization and punctuation skills:

(1) Select samples of written work by the pupils with errors in capitalization and punctuation. Write the material on the board or on a chart. Discuss and correct the errors.
(2) Call attention to the capitalization and punctuation marks used when writing on the board.
(3) Emphasize the importance of the correct use of capitalization and punctuation skills in all the pupils' written work.
(4) Ask pupils always to edit and proofread all their written work.
(5) Provide dictation exercises calling for the use of certain skills. Have the children check their own work and analyze their own needs.
(6) Give the pupils work exercises and require them to explain orally why they used particular capitalization and punctuation items.
(7) Stress the relationship of meaning and clarity of expression to punctuation.
(8) Keep all drill and practice periods short. Work on the specific needs of the pupils. Review all items learned regularly.
(9) Give short diagnostic tests frequently. Have the children check their own work.

Usage:

Disadvantaged children who use a subcultural dialect or speak a language other than English at home will very likely have difficulty with correct standard English usage in both oral and written expression in the school situation.

So as not to deter them from expressing themselves spontaneously, the teacher should demonstrate a positive attitude toward the language spoken by disadvantaged children. He should show them that he feels their language is one that he accepts and respects. When he has won their confidence and has gained good rapport with them, he should help help them understand that there are times and places when the non-English language or substandard dialect may be used, such as at home or with his friends in the neighborhood. Then he should go on to explain that there are times and places when standard English should be used so he, the teacher, would help them in developing standard English usage habits in order that they might have the knowledge and skills available for use whenever the need arises, such as in certain school situations and when speaking to an individual who speaks standard English.

The first and most important step for the teacher to take in helping the children develop correct usage is to motivate the pupils to want to speak good standard English. Each child must be made to realize the value and importance of speaking standard English well and to understand the benefits that will accrue to him when he is able to communicate in good standard English in the school situation and with people who use good standard English in communication with him. Children in the lower grades may be too immature to understand and realize the importance of the use of good standard English, so at this level the teacher will need to motivate them primarily by providing them with a variety of interesting and stimulating experiences in oral and written expression that will give them the practice they need to correct their usage errors and develop good usage habits.

In developing an effective usage program, the teacher should follow these guidelines:

(1) Only a few errors should be selected for specific attack. The teacher should listen to his pupils and quietly keep a list of the errors he heard often. Then he should select from six to ten of the most common errors and concentrate on them during the year. Other errors made by the children should be corrected incidentally.

(2) Only common speech forms that are not acceptable in informal, standard speech should be corrected. The level of usage which the elementary school teacher should seek to attain is that of good colloquial speech.

(3) Each item selected for correction should be called to the attention of the children and discussed with them. The children should not be allowed to use the incorrect forms in their oral or written expression in any situation in school after lessons have been presented teaching their correct use.

(4) Oral drill should be emphasized. The children should have frequent oral practice in using words correctly in various contexts and various situations. They should have an opportunity not only to use correct forms but also to hear them repeatedly. Some drill should be designed to forestall errors. Such practice would familiarize children with desired patterns through a positive approach.

(5) The children should have continued practice with desired forms taught in earlier lessons throughout the school year.

The following suggestions will help the teacher in improving the English usage of Elementary school children:

(1) The teacher may make a list of common sentence forms used by the children which contain words that are part of their dialect but are considered incorrect when compared with standard English. Then he may have the children state other ways in which each sentence may be expressed to convey the same idea, guiding them to use standard English in the sentences suggested. Sentences such as the following may be used by the teacher of Negro children if the pupils use them in their oral or written expression:

a. She say she carrying me to the store tomorrow.
   (She says that she is taking me to the store tomorrow.)
b. He be going to the park.
   (He is going to the park.)
c. Miz Jones ax me chunk the ball to Joe.
   (Mrs. Jones asked me to throw the ball to Joe.)

(2) Provide the children with lessons designed to correct their errors by developing correct use of the appropriate word or form and also by developing correct use of the word used incorrectly. For example, if the children use the word went when they should use gone, as in "We have went to the park many times," they should be taught to use both went and gone correctly. Lessons teaching the correct use of each form may consist of oral drill with sentences, short dramatizations, stories, and games which emphasize correct usage of the form to be mastered.

(3) Provide the children with many opportunities to use the correct forms being taught in various activities and experiences which encourage natural communication, such as conversation, discussion, storytelling, dramatization, reporting, making announcements, giving directions and explanations, letter writing, and creative writing.

(4) Provide the children with meaningful drill exercises to establish correct usage of the correct forms through repetition. Keep the drill periods both short and specific. Both oral and written drill should be provided, but the emphasis should be on oral drill. All written drill should be supplemented by oral drill. Have the children work in small groups to gain practice in saying and hearing the correct forms repeatedly.

The teacher who works with disadvantaged children has an unusually difficult task in developing correct standard English usage because of the influences of the home environment where members of the family speak a subcultural dialect or a language other than English. The teacher must be certain to instill in such children a strong desire and a clear understanding of the need to learn correct standard English, without making him feel, at the same time, that his home language or

dialect is negated. Also, because these children do not hear and do not use standard English at home, it is the school that must be depended upon to provide them with the experience and practice they need in speaking and writing correctly in standard English. Therefore, the teacher of such children has a definite and critically important responsibility in helping them develop the ability to communicate effectively and comfortably with others in standard English so that they will not be hindered in the school situation or in adult life and prevented from reaching their full potential.

APPENDIX B

Poetry for Choral Speaking

The following poems may be used effectively with the different types of choral speaking arrangements:

1. **Refrain:**
   - The Wind (Stevenson)
   - Hickory, Dickory, Dock
   - Hot Cross Buns
   - Shoes and Stockings (Milne)
   - This Is the House That Jack Built
   - O Captain! My Captain! (Whitman)
   - In the Week When Christmas Comes (Farjeon)
   - Popcorn Song (Willson)
   - The Owl and the Pussy Cat (Lear)
2. **Antiphonal:**
   - What Are Little Boys Made of?
   - Ding, Dong, Bell
   - The Grasshoppers (Aldis)
   - Godfrey Gordon Gustavus Gore (Rands)
   - Who Has Seen the Wind? (Rosetti)
   - The Duel (Field)
   - Washington (Turner)
   - City Street and Country Roads (Farjeon)
   - Winter Night (Butts)
3. **Sequential:**
   - Mice (Fyleman)
   - One, Two, Buckle My Shoe
   - For Want of a Nail
   - Doorbells (Rachel Field)
   - Laughing Song (Blake)
   - Travel (Stevenson)
   - April Rain Song (Hughes)
   - Abraham Lincoln (Meigs)
   - Afternoon on a Hill (Millay)
4. **Groups and Solos:**
   - Merry-Go-Round (Baruch)
   - Where Go the Boats? (Stevenson)
   - Christmas Is Coming
   - The Monkeys and the Crocodile (Richards)
   - The Goblin (Fylemen)
   - Jonathan Bing (Brown)
   - Stopping by Woods on a Snowy Evening (Frost)
   - The Cowboy's Life (Adams)
   - High Flight (McGee)
5. **Unison:**
   - I Had a Little Nut Tree
   - There Was a Crooked Man
   - One Misty, Moisty Morning
   - Mrs. Peck Pigeon (Farjeon)
   - Wynken, Blynken, and Nod
   - Night (Teasdale)
   - The Mysterious Cat (Lindsay)
   - I Hear America Singing (Whitman
   - Sea Fever (Masefield)

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CHAPTER 2 - SOCIAL STUDIES INSTRUCTION FOR THE EDUCATIONALLY DISADVANTAGED IN ELEMENTARY SCHOOLS

The goals for the teaching-learning of the social studies in the elementary school are the same for all children. However, because the learning opportunities, the values, the attitudes, the interests, and the motivations of children from culturally different backgrounds are not like those of children who form the bulk of the school population, that is, who have middle-class backgrounds and conform to the middle-class culture of the school, it is necessary to examine the curriculum sequence, the subject matter, the methods of teaching, the materials and the evaluation techniques that can be used in the social studies to secure maximum effectiveness with children who are culturally different.

A good instructional program in any subject for any group of children is rooted in the objectives of the society to which they belong and is based upon the developmental characteristics of children.

What are the objectives of our society? In the report of the President's Commission on National Goals it is said that our major goal at home is the enhancement of the individual. This should be the concern of all our institutions--political, social, and economic. This concern for the individual is deeply rooted in the cultural heritage of our democratic society and has played a dominent role in all of our educational arrangements even while we sought for group stability and strength through universal education.

The school, as one institution of our society, is therefore charged with the responsibility of individual enhancement along with the home, the government and all other social institutions. How can this be achieved? The Education Policy Committee of the NEA in its most recent atatement of educational purposes has said that the central purpose of American education--and of the school in particular--is the development of the ability to think. Included in this rational power is . . . "the process of recalling and imagining, classifying and generalizing, comparing and evaluating, analyzing and synthesizing, and deducing and inferring. These processes enable one to apply logic and the available evidence to his ideas, attitudes, and actions, and to pursue better whatever goals he may have."

These cognitive skills have received much emphasis in recent years as the school has reconsidered its programs of mathematics, science, and foreign language. Development of skills of inquiry, problem solving, generalization, and divergent thinking have been encouraged.

But beyond the need for cognitive skills lies the need for such cognitive (or affective) variables as interests, attitudes and values. Jackson and Strattner, in discussing these non-cognitive factors, stated, "Learning effectiveness is enhanced by the possession of particular psychological strengths, such as positive attitudes toward school, realistic achievement goals, and feelings of self-confidence." Review of Educational Research, December 1964, p. 513).

The way a child views himself, the school, and his peers determines his interest and aptitude for learning the cognitive skills he needs to be successful in school and in life.

It would seem then, that the objectives of the school, to support the goal of society, must be two fold: cognitive and affective. These objectives would apply to all children. However, disadvantaged children are often unable to develop the desired rational powers because 1) they see no value in learning nor in the outcomes of schooling, and 2) they picture themselves as unable to learn.

The general aims of the social studies curriculum in the school is to help children (1) to live effectively now and in the forseeable future, (2) to carry on the freedom they have inherited, and (3) to make changes as conditions in the environment change. To do this they will need both cognitive and affective understandings.

What do we know about the development of children that is relevant to these general aims? Out of the research projects and studies of the first half of the century has come a wealth of information about the growth and development of children. From this information certain principles have emerged regarding the growth process, the inter-relatedness of the various aspects of child development, the relationship of heredity and environment, and the differences that occur among children.

Studies have also shown that many aspects of growth and development are influenced by the cultural milieu of the child and his family. This increases the possibility of diversity among children in American schools. Further studies have indicated that economic and social deprivation often leads to certain deprivations in growth and development.

Realization that all of these facets of growth and development have a profound effect upon the ability of the child to cope with his world has led to the belief that teachers need to know the principles of growth and development and how to use them in creating a good learning environment.

Teachers need to learn ways of looking at the developmental patterns of man. They need to be able to assess the developmental level of individuals and groups. They need to know about the tasks or stages of development that are building blocks to a healthy personality. They need to be able to assess progress in the development of a fully-functioning human being.

The instructional program developed in the school will not only meet the needs of the children in the main stream of American life but will also provide for the children whose needs are different because their development has been influenced by culturally different backgrounds. Some of these needs may be physical because of economic deprivation; some may be emotional because of broken homes or very large families; some may be intellectual because of the low educational level of the parents and other adults in the environment. For whatever reason there may be growth and development differences, it is still the aim of the school to help each child develop his full potential.

The teacher of the social studies is committed to helping each child achieve personal enhancement first, by studying and understanding him as a person and second, helping him gain appropriate cognitive skills and affective understandings. It is to the second committment that the remainder of this chapter is devoted.

The Curriculum Sequence:

After studying and understanding the children in his group, a teacher is ready to lay out specific goals and develop an over-all plan for reaching these goals. This is the curriculum sequence. It is a step-by-step plan containing all the activities the children will engage in to reach these goals. It delineates the specific subject matter appropriate to each activity, the materials that can be used most effectively, the methods for presenting the materials, and the techniques to be used to measure and evaluate the learning that takes place.

Since the state rather than the federal government is charged with the most direct responsibility for education, the broad outline for curriculum is laid down at the state level. Some kind of framework is established for each area of the curriculum but this is in very general terms and is designed to be flexible enough to meet the school needs of all the children in the state. This broad framework can serve as a guide for the development of appropriate curricula at the successively lower administrative levels of county, city, school, and finally the teacher and child. It is, ultimately, each teachers' responsibility to develop a unique curriculum for the particular group of children that he teaches each year.

It is possible that, on paper at least, the curriculum sequence for each of two culturally different areas will look very much alike. The uniqueness and effectiveness of a curriculum design lies in the specific materials, methods, and children that are part of each learning experience.

The curriculum sequence in social studies for culturally different children must take into consideration such factors as these:

1. The language spoken in the home may not be the same as that spoken in the school and meanings may be lost
2. The pre-school experiences, despite television in most homes, may have been so meager that the child cannot grasp the intent of the school activities
3. The school activities may be so far removed from the real world of the child that he sees no point in them for himself
4. The child's physical health may be impaired through lack of food or lack of sleep because of economics and/or social arrangements and he cannot function.

5. The values and standards of the group from which the child comes are so different from those of the school that he feels alienated--may in fact feel inferior and "no good"

There are many more. Some of these factors are directly related to cognitive learning. However, most of them are affective understandings that ultimately make a difference in the quantity and quality of the learning and use of facts and ideas.

Programs such as Operation Head Start are geared to bridge the gap between the cultural background of the child and the mainstream culture of the school. This is one way of solving the curriculum dilema--fitting the child to the curriculum. However, it is possible to build a curriculum sequence that takes the child from where he is when he enters the school to the place where the majority of children are in the mainstream culture by providing a learning environment appropriate to his needs.

Specifically, in designing a curriculum sequence in California for young children in a metropolitan area, the teacher will need to engage the children's thinking to determine not "Our Community Helpers" but rather "Our Relationships in Our Community," the idea being that each person is a part of a community and, in order to understand that community, he must understand himself and his community relationships. Children and teacher together build a curriculum. They explore an area that has real meaning and that leads to greater understandings of the present world and of the world that may be. Children must be helped to see and feel reality, to see and feel change, and to understand the process of problem solving that can lead from one reality to another.

Each step in the curriculum sequence is dependent upon the attitudes and learnings developed in a previous step and should be consciously designed to proceed in ways that will help the children gain self-fulfillment. The teacher keeps in mind the middle-class orientation toward which he is guiding the children but he must accept and respect the children as they are and help them accept and respect themselves before he can hope to extend their knowledge and acceptance of a different way of life.

It seems possible, then, to take a broad framework, such as that provided at the state level, and use it as a general sequence within which each teacher develops a particular program for a particular group of children that will lead to their optimum development.

The Subject Matter:

An examination of some curriculum sequences in social studies may lead one to believe that the subject matter came first--the curriculum design is really a way of handling the subject matter, not a procedure for reaching certain goals. The history of the evolution of this area of the curriculum tends to confirm this idea for at one time most of the disciplines now included in the social studies was taught as a "separate subject"; then those that seemed rather more related than the rest were taught together as a "broad field". Both of these patterns of curriculum designs are simply ways of presenting the cognitive aspects of the field. Interests, attitudes, behaviors were by-products of the content centered memorize-recite pattern or were acquired someplace other than the classroom. In the last 50 years, with the new knowledge and understanding of child growth and development and of the learning process, subject matter has gradually come to be regarded as not an end in itself, but one of the means to the end of self-fulfillment for the child. Knowledge about the subject is not the goal--rather knowledge becomes the means by which understandings, attitudes, and behaviors needed by the child to function in a democracy are achieved.

What knowledges from the social sciences are important for a child's understanding of himself and his relations with other people? What basic concepts, what generalizations, will give him a framework for analyzing his own situation in a particular time and place and for discovering solutions applicable to his own problems?

The subject matter for the social studies is drawn from all of the social science disciplines--history, geography, government, psychology, anthropology, economics, and sociology. These are the areas of study concerned with man, his relationships with other men, and his relationship to his environment. This is an enormous field that contains a huge number of concepts. Some of these concepts are beyond the grasp of children in the elementary school who come from middle class backgrounds. Many of these ideas are meaningless and useless for children from under-privileged areas.

The school must find a way to select social studies content that will be understandable, that will help children arrive at generalizations, and that will be useful to children in making deductions. The usual way has been to select bits and pieces from the subject areas of the social sciences, particularly history, geography, and government. Another way is to cut across the lines of all of the separate disciplines and to consider as the subject matter for the social studies those recurring life situations with which everyone must cope, such as providing goods and services, transporting people and products, governing, educating, protecting and conserving natural and human resources, and expressing esthetic and spiritual impulses. This latter approach puts the focus of social studies on total human relationships rather than on any one aspect of those relationships.

The teacher must select from all the possible social studies subject matter that which he knows is uniquely applicable to the needs of the children he teaches. To do this a teacher must have considerable depth of knowledge himself in the various disciplines, and he must know the needs of the children. The teacher begins with the subject matter that the child brings, however meager that may be, and builds upon that, step by step, ideas, concepts, and generalizations in each of the subject matter areas related to the specific area or problem being considered.

It is really impossible to select the exact subject matter that is appropriate for a group of children unless the needs of the children are known. Thus, it is impossible to say that this and this should be taught to culturally deprived children. It is only possible to say that a planned, sequential approach in the social studies will help children arrive at generalizations that can be used in their own life situations and that this is more than a memorization of facts--it is a structure of mans relationships to man and to things.

The Methods of Teaching:

If the school really wants to help children learn to think and work as social scientists, then the methods must be more than the methods of read and recite or memorize and recite; the methods used must give children opportunities to act as the social scientist does.

The sequence of activities must be so designed and arranged that children have opportunities to think, to collect data, to make choices. They need opportunities to select from alternatives and to take responsibility for their choices. This means that children need to be helped to think creatively--to do some "free-wheeling." They need to learn to group ideas into meaningful clusters, rather than memorizing discrete facts, and to use these clusters of ideas to evolve generalizations that can be used in successive situations.

In devising learning situations for the culturally different, it is important that the teacher remember that many of these children come from homes in which the adults have a minimal level of education, and where education is not seen as a way of advancing ones self economically; that the slum living, large families and broken homes often found among the deprived all conspire against the physical, intellectual and emotional development of the child; that all later learning is influenced by the basic learning that takes place before the child comes to school; that if the pre-school learning has been inadequate, it is the task of the school to provide situations that will lay the foundation for a rich and rewarding experience in human relationships and environmental relationships.

Teachers need to study the kind and degree of deprivation each child has suffered in order to know what methods will be most appropriate. Children differ in degree of socialization and in the way they respond to the school environment. Some culturally different children come to the school with very little understanding of the need to work with others; they are not competitive--they simply do not know how to work with people because they never have had opportunities to help solve a problem. These children need to be introduced to group work; they need to feel rewarded in a group situation.

Some children are extremely docile and do everything they can do to meet the standards of the school whether they understand what they are doing or not. These children need guide lines that will help them establish a set of personal values. They should not be forced into group work too rapidly nor should they be left on their own entirely.

Some children resist the authority of the school and show open rebellion for any type of learning. These children need to be helped to see the role that school and learning can play in their lives. When they begin to see themselves and the school in a positive light they can accept some of the restrictions and rules.

Teachers need to recognize that helping culturally different children in social studies requires particular attention to method. These children from depressed backgrounds have had limited experience with things and with words. This means that teachers must provide opportunities for these children to have rich first hand experiences with things that seem common to middle-class children but which are uncommon to deprived children. These children need many opportunities to talk about and write about their experiences.

The materials used to present the social studies should be colorful and varied in style and in texture. Since most disadvantaged children are verbally handicapped, both in speaking and reading, they need more first hand experiences than text books. All the audio-visual aids--films, television, records, slides, charts, pictures, etc.--become steps between the real experience and the abstract book presentation. As new content is experienced, new levels of abstraction can be reached, and problems of increasing difficulty can be analyzed and solved.

This methology should not only lead to better understanding of the cognitive aspects of the social sciences but, because it focuses on each child and his unique needs, it should increase his self understanding and make it possible for him to develop a positive self concept.

Summary

There are many good courses of study in the social studies that have been devised by school groups to meet particular needs. These can be used as guides by teachers of any group. Examples of this are: The

The Contra Costa County, California, Social Studies Series
"Basic Issues in Citizenship" from the Lincoln Filene Center of Tufts University
Wisconsin Department of Public Instruction, "A Conceptual Framework for the Social Studies in Wisconsin Schools."

However, to be truly effective, the social studies curriculum content, and methods of teaching evolve as a teacher and a group of children work together to meet basic needs. For the teacher of the culturally disadvantaged this is an opportunity to build a learning situation that will help children develop cognitive and affective understandings that they can use to solve their problems and move out of their depression toward the main stream of American society.

6

CHAPTER 3 - SCIENCE INSTRUCTION FOR THE EDUCATIONALLY DISADVANTAGED IN ELEMENTARY SCHOOLS

Out of the past:

Man has progressed through a continual series of ages in the process of arriving at the present stage of modern culture.

The stone age lasted for thousands of years. The bronze age lasted approximately 1,000 years. The industrial age had its beginnings about 200 years ago. The air age started between 50 and 60 years ago. The atomic age began about 25 years ago. We are about 7 years into the space age.

The primary economic and social force for the past 200 years has been the industrial revolution that made its advent with the invention of the steam engine.

Industrialization changed things. It moved people off of the farm and into the city. It has helped produce more goods, with less human muscle power and at greater profit for both employer and employee. It has created energy available for the disposal of the average family that is equal to the work of 200 slaves of ancient days. Few emperors of ancient time had the potential ease of living that a private citizen has today.

Into the present:

A new revolution is in progress. It seems to hold promise for changing our way of life even more drastically. More often than not, revolution seems to mean discontent with what we have and no clear idea of what we are going to come out with.

Be that as it may, the new revolution is the result of increased knowledge. It is sometimes referred to as the knowledge explosion. Knowledge is doubling every 10 years. We are told that engineering graduates can expect a professional half life of about ten years. Half of what they now know will be obsolete in ten years. Only half of what they will need to know in ten years is available now.

The industrial revolution built a society based on natural resources. The knowledge revolution is tending to build a society resting on human resources.

Our schools and colleges are in the midst of this revolution. No educator can wholly escape the infection. If there be any that have, they will not escape it long.

Science and technology are bringing rapid change. For almost 2,000 years the concepts of Aristotle guided scientific thought. "Self-evident principles" were the source of explaining phenomena. It is a self-evident principle, for instance, that everything in the world has its proper place. Rain falls to the ground and runs in streams and rivers to the oceans because that is its proper place. Aristotle's method sought to reason "why?"

Modern science began with Galileo.[1] He asked the question, "How?" Sir Isaac Newton followed this train of thought and came up with laws that seemed to describe the "how" of a mechanical universe.

Just prior to the beginning of our 20th century certain phenomena were being discovered which were obviously not subject to Newton's laws. The theory of a mechanical universe began to topple.

Scientists, at present, are leaning on mathematical formulae to describe the universe microcosmically and macrocosmically. The quantum theory and the theory of relativity are basic to the technological explosion.

Historically, our own nation has set itself to build a literate citizenry.[2] By generally accepted standards, the United States is relatively highly literate. The definition usually associated with literacy means that one is able to read, write and use basic mathematics. But how literate is our citizenry in science and technology? Many of our high school and college graduates are relatively illiterate in science, and this in a nation where education is second only to construction as the country's largest industry.

What about the future?

We know that technology is making traditional jobs obsolete.[3] It is creating new ones for which workmen will need special technical training. How can education help prepare citizens for the years ahead?

In the past, it has taken the majority to produce goods so that a relatively small minority might take their ease. Some authorities are prophesying that by 1985, just 20 years from now, a minority of the population will be needed to produce all that is needed by the majority, for the first time in history. There will be few jobs as we know them now. There will be more leisure time for a vastly greater proportion of the country's citizens.

New business is being introduced daily by technological breakthroughs.[4] The emphasis in business circles has shifted from natural resources to brain power resources, new ideas.

Rapid advances in science and technology will become increasingly a part of our educational problems. Insofar as an educational goal is to prepare our children to assume a meaningful place in society at maturity, any changes in social structure will need compensatory changes in goals of education.

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3. Bengelsdorf, I.S., "No Place to Hide in Life of Future," Los Angeles Times, Sec. C, Oct. 24, 1965, p. 1
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If, for instance, the technology of computers continues to accelerate the automation of production of goods, then obviously in 20 years we will need fewer people to produce. Then, according to today's standards the majority of the people will be socially useless, because today's standards are work-oriented.

Probably education will continue to grow in importance. Perhaps in the more advanced nations the citizens will be learning and studying all their lives. They will have to if they are to keep up. With knowledge doubling every 10 years, a Ph.D. who does not continue his education, within 20 years is hardly superior to a dropout in the kind of world we are making.

Some of the educational implications:

With the thumbnail sketch of the revolution we are now in as background, there are some questions we might ask and some guesses we may make. First of all, shall we educate for a particular age? It would seem to be a dangerous practice. Because as we go from one age to another, it does not mean we discard all that we have gained from the previous age. We still use the materials and learnings of each age. We have products and skills in stone, bronze, iron and steel. We are still in the industrial age, and the others, too.

We need to notice one important trend. The length of time between each of the ages keeps decreasing drastically.

It seems probable and possible that within a very short span of time we may be experiencing a critical new age in the matter of every few months.[5]

It seems safe to say that every indication points up the fact that the children in school today will have to live in a new age by the time they take their adult role in society.

Jobs and careers of today will be replaced by those of tomorrow. In a few short years today's world will not exist. If science is to play such a directly important role in the lives of our children, it seems a self-evident truth that they need to be made scientifically literate.

Many children drop out of school by the end of the eighth grade. Students that continue through high school generally take only one year of science. The development of scientific literacy, then, needs to begin early. Otherwise, if the high school and college graduates scarcely be literate in science, where shall the culturally deprived and the drop-out be?[6]

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5. Costa, Arthur L., Science Education in the Space Age, U.S. Gov't Printing Office, Nov. 1964, p. 77
6. Watson, Fletcher G., and Cooley, William W., "Needed Research in Science Education," fifty-ninth Yearbook of the National Society for the Study of Education, Part I, University of Chicago Press, 1960

Some educators are giving science a relatively greater proportion of time and attention in the elementary school curriculum.[7] The need for development of scientific literacy in all children can be met in some measure by the elementary school.

One of the aims of elementary school science teaching is to help all the children of all the people to reach the optimum level of scientific literacy.

Developing Scientific Literacy in the Culturally Deprived

In 1960, Mr. Carol M. Charles compared achievement of fifth grade pupils coming from different cultural backgrounds.[8] He found the children of the minority ethnic groups were retarded approximately 2 years in science achievement and, as may be expected, were significantly over age for their grade.

Our nation is mobilizing its resources to meet the need of culturally deprived children. What are some of the knowledges and skills the teacher needs in order to reach these children and help bring them to a more competent level of dealing with the world in which they live?

It seems we need first of all an appreciation for one of education's basic problems - communication - how to get through to the learner. A great deal of time and energy may be wasted simply because of misunderstood communication.

If educators are going to effectively direct learnings, they need to accomplish at least three things:

1. Awaken the learner's interest - which is not always easy.
2. Bring the learner at least to some level of comprehension - which is even harder.
3. Get application - and this is most difficult of all.

Any child has stimuli about him, as well as within him, competing for his interest. The culturally deprived child is different only in that the circumstance is individual. He has particular and peculiar needs.

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[7] Victor, Edward, Science for the Elementary School, The MacMillan Company, New York, 1965, p. 3

[8] Charles, Carol M. (Mr.), "The Indian Child's Status in New Mexico's Public Elementary School Science Programs," (Unpublished doctoral dissertation) Univ. of New Mexico, 1960. Reported, in part, Journal of Educational Research, 57:261-264, January 1964.

A teacher who understands the problem that it is to gain and sustain interest will be much more sympathetic and charitable toward a child whose interest may not only be hard to gain but which wanes so quickly.

We need to remember that the child may be simply overwhelmed. There is such a thing as having too many stimuli vying for mastery. Physical needs may not have been met. Breakfast may have been missed altogether. Perhaps the day started with a fierce family argument. The day may have been off on the wrong foot before the child ever put a foot on the school yard.

Interest in the school and its goals is not turned on and off at will by the teacher. Frustration of the child's more basic needs may have built an effective wall that keeps out everything except what is most pressing to that child at that moment. It will take something exceptional to penetrate a wall of conditioned emotional response.

We need, also, to steer clear from unwarranted assumptions about the learning process. There is a common falacy - the belief that individuals get things quickly. Rather, we need to think in terms of how fast (or slowly) a little child's mind can digest new ideas. How fast can it receive and understand? Even most adult minds receive slowly and digest at the same rate. Ideas take time to sink in. Patience is a key to this problem.

With the culturally deprived child, particularly, there is a generally less rich background of experiences. Perhaps he has so few experiences and information that new ideas have a high threshhold of resistance.

We know that words may have little meaning out of context. Sometimes they are not too well understood even in context. To avoid frustration for teacher and pupil, we need to avoid overestimating the information background of the children and underestimating their intelligence.

We see, then, that feelings, emotions, needs and misunderstandings may be blocks to getting attention. Teachers who are aware of some of the kinds and causes of mental blocks which are often encountered in the classroom have already made a better start toward communicating.

Even if we succeed in catching the children's interest, we are only a little way up the ladder to successful communication. We want comprehension on the part of the children.

There is always a certain minimal dependence upon speech for introducing activity, directing, suggesting and other phases of a learning episode. We depend upon words to convey our ideas to another. In that interaction something may happen to a word. In transmission from teacher to learner a word's meaning may change.

Abstract words, especially, may have little communicative value to children from underprivileged neighborhoods. Their vocabulary is usually relatively restricted. Semantic difficulties are not uncommon among educated people. In a little hotel in one of our northern states hangs a sign, "Have your next affair here." This could be interpreted more than one way.

Words do not have one guaranteed meaning. They may change their meaning as they go from the speaker's mind to the listener's. Words have meaning only as the mind gives them meaning. The step of attaining comprehension may be fraught with difficulty - but it is a needed accomplishment for successful communication.

After we have gained interest and comprehension, we need a further step - application. One definition of learning is "a change in behavior." In the applicatory aspect of communication one needs to lead the child to active, functional situations where the principle learned may be applied. Repeated use of a learning, in a meaningful situation, reinforces it. The learning becomes a skill as the individual begins to have a wider sense of its applicability and more or less automatically uses it appropriately. Consciousness of these three aspects of communication can be a strength to teaching the culturally deprived.

As an example, in teaching magnetism in the third grade, we have gained interest by first procuring two very strong bar magnets. During the science period we showed the magnets to the class and demonstrated how they were attracted to one another. We asked if one of the children would like to demonstrate how they worked. Of course, they all would like to. We selected one child and as the child was on his way to the front, we reversed one of the magnets so that when they were placed in the child's hands, like poles were facing each other. The child struggled to get the ends together, but they would not meet. The rest of the children observed with amazement. We had a problem. Why wouldn't they go together? A few of the stronger boys in the class were given an opportunity to try to put the ends together. After a futile few minutes, we retrieved the magnets in such a manner as to get opposite poles together and joined the magnets with ease before the puzzled class. There was a lively discussion of the problem. Someone finally asked what would happen if one of the magnets were turned end for end. When we did that, the magnets would not come together. Comprehension began to percolate through the class. They began to understand that magnets had particular properties. Then we were able to talk to them about the north pole and the south pole of a magnet. When we talked of like poles repelling each other, the children understood, from actual experience as well as close observation. For application, there are several methods of providing problems. In figures 1 and 2 are drawings of problems involving a "floating" piece of metal. The magnetized washers are placed over a wooden dowel with like poles facing each other. The upper washer or ring magnet floats above the lower. In figure 2, two small bar magnets are placed in a plastic or glass tube with like poles facing each other. The upper bar magnet floats over the lower magnet. The children can apply what they have learned to the explanation of this phenomenon. In figure 3

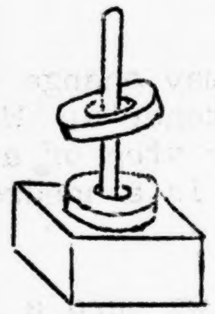

figure 1

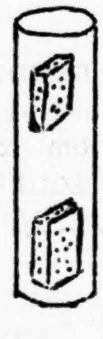

figure 2

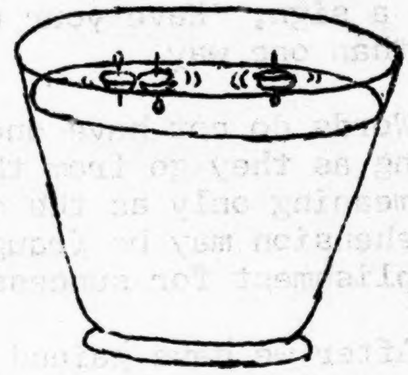

figure 3

there is both repelling and attraction demonstrated. Use a glass bowl with sloping sides. Fill it almost full with tap water. Magnetize three needles by stroking them one way only for 100 times each. Then slice some cork for floating material. Thrust the needles through the corks and put all three points up. They will repel each other. Then invert one of the floating needles and see what happens. See if the children can explain what is occurring. If they can, they are able to apply what they have learned. They may also be asked if they can devise demonstrations which would illustrate the principle that like poles repel and unlike poles attract one another.

Teacher Preparation

It is no secret that there is a general feeling among teachers that formal courses in college science have not contributed in effective ways to improving their instruction of science in their classrooms.[9]

It is interesting, too, that good teachers and good science materials do not necessarily produce good elementary school science teaching. If the underlying philosophy and intent of a particular science program is not clearly understood, a teacher may not have results in keeping with expectations and become disappointed with the program. But the reasons for this seemingly valid complaint are not so easily determined. Many factors are involved.

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[9] Smith, Herbert A., "Educational Research Related to Science Instruction for the Elementary and Junior High School: A Review and Commentary," Journal of Research in Science Teaching, Vol. I, Issue 3, 1963, p. 221

Evidence is quite clear that as a group, elementary school teachers have an inadequate science background.[10] Many of these teachers have been exposed to the minimum science requirements in high school and college. Usually, courses that have been taken have been in the biological sciences. This is not a criticism. We are merely stating the problem as research has found it.

These facts seem to point up a need for bolstering science teaching in the elementary school. What are some of the ways in which we can meet that need? Inservice programs may be a partial answer. We do not mean to imply that a teacher's ability to state the philosophy of a science program automatically indicates that the teaching behavior will be consistent with the program's philosophy. The inservice program, or any other plan, is successful only insofar as it changes teacher behavior.

Obviously, there are no easy answers to the elementary school science teaching problem. One partial solution we have already suggested - inservice training. Another suggestion is for individual teachers to build strength in science gradually. Each year one could prepare and use and refine a new segment of a grade level's suggested science curriculum. Over a period of a few years one's competencies will develop, accompanied by a sense of ease and security previously unknown in the area of science teaching.

The principle of the self-contained classroom for the elementary school has much to commend it. However, it is not the perfect answer. We do not suggest that there may be a complete or perfect answer. The complexities of teaching and of learning seem to preclude a "perfect" answer. The system of the self-contained classroom may have weaknesses, but it still seems stronger than other systems devised so far. One of its weaknesses arises from the fact that it is impossible for one teacher to be a master of every subject he has to teach in his classroom. He will probably be strongest in the area of his academic major in college. It would not even be desirable to insist that all elementary school teachers major in the sciences. We need majors from the other areas of the curriculum, too.

For example, one may develop a unit on the human body. Most children are interested in themselves. The fourth grade level is a good place to teach this unit in the average school. But for the culturally deprived, it may be wiser to delay this until the sixth grade primarily because the reading the children will want to do will probably be too difficult for the disadvantaged child in the fourth grade. This is not meant to be a hard and fast rule. Each teacher will be competent to decide what is appropriate for his class.

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[10] Watson, Fletcher C., "Research on Teaching Science," Handbook of Research on Teaching, N.L. Guge, editor, Rand McNalley & Company, Chicago, 1963
Smith, H.A. - op. cit.
Nichols, Benjamin, "Elementary Science Study, Two Years Later," Journal of Research in Science Teaching, Vol. 2, 1964, pp. 288-292

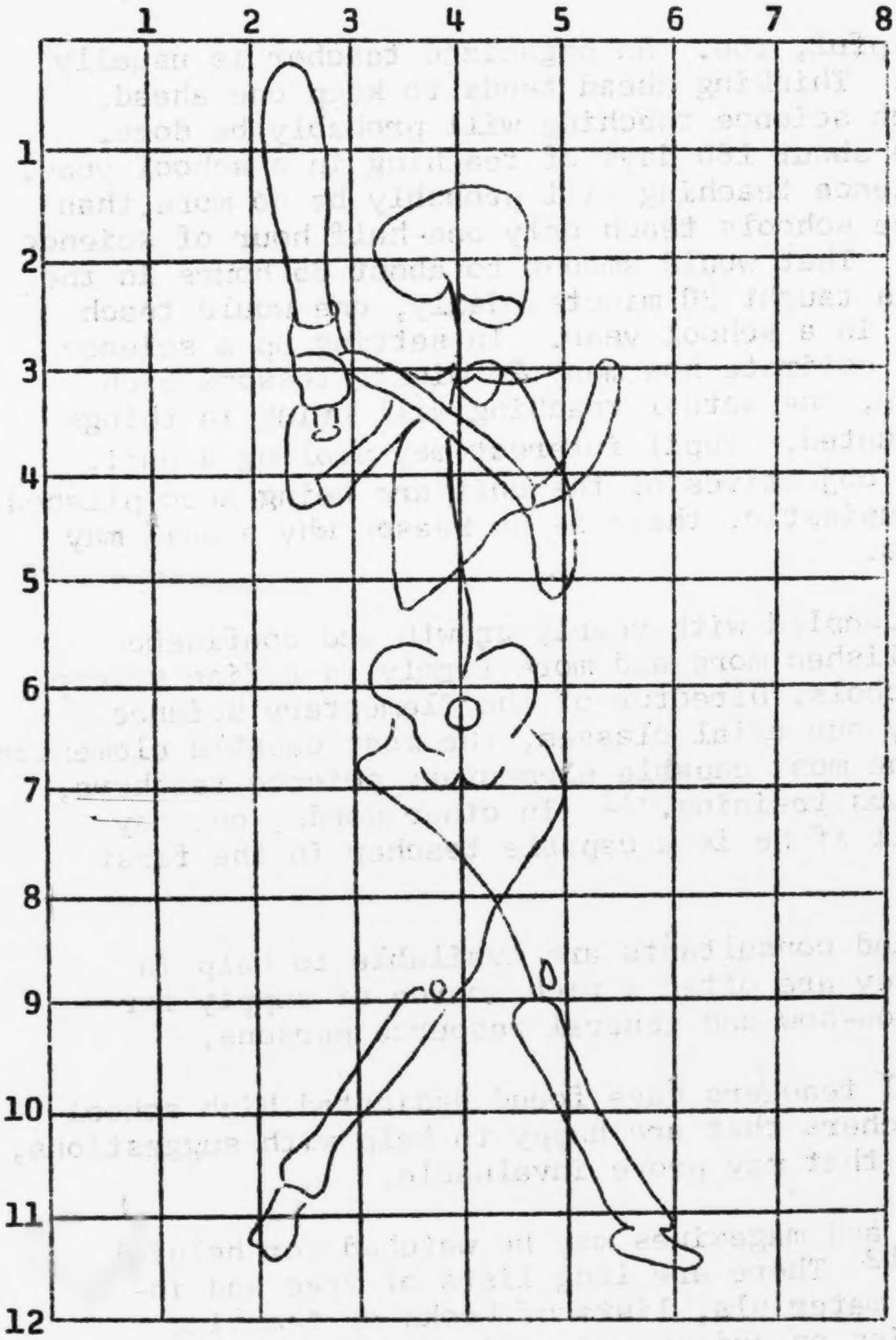
The Elementary Science Project of the University of California, Berkeley, has several inexpensive units upon which a teacher may build. One excellent unit developed with scientific objectivity coupled with intensely interesting materials for children at all grade levels is entitled, "How I Began." Before using this unit a teacher should get his principal's approval. Unfortunately, prudery has not a few advocates at all levels of education. For many, any teaching about sex, no matter how excellently and properly it is done, is taboo. However, it is likely that one will find that the culturally deprived will be more ready to accept it than will the solidly middle-class school. At the elementary school level, only the scientifically objective aspects of sex should be dealt with.

"How I Began" may be purchased through the Board of Regents of the University of California at Berkeley, California. Questions about the materials should be addressed to the Elementary School Science Project, in care of the University of California.

The State Department of Education in California publishes a Basic Science Education Series which has an excellent little book on "How You are Built." It is illustrated with pictures of the bony skeleton and the different parts of the body along with explanations of their functions. These illustrations may be easily transferred and "blown up" on a large piece of tag board, by using a system of grids. The illustration given on the following page is one way of doing it. First, select the picture you wish to enlarge. Then, on some transparent paper or plastic, make a small grid. Make a large grid on the tag board with the exact number of lines you have put on the smaller grid, just on a larger scale. On the tag board, be sure to put the grid on in very light pencil because you will want to erase those lines. Lay the transparent template over the original picture. Then by plotting with the use of the number system, one can place each line in its proper location in a square and enlarge the original picture as many times as he wishes. Coloring the resulting pictures gives even a better effect. An easy way to color them is to use wax crayon. After the crayon color is on the picture, take a piece of soft absorbent tissue paper and rub the color to make it smooth and less harsh. These pictures make excellent bulletin board materials and can be saved from year to year. They will stimulate the children. Motivation will be built in. Each year you will probably want to make a few new pictures to illustrate your lessons.

From science text books available in the school in which one teaches, a teacher may find more information to include in his unit on the human body. All biblographic materials should be carefully noted so the research will not have to be done over again the following year. Arrange to have room for more bibliographic records as you discover new materials and sources.

The following year a teacher may spend developing a unit in astronomy or space. Again, even the culturally deprived will be interested because the subject matter is current on TV, in the news, in comic books, in movies and other media of communication that the child is familiar with.



Tag board with light grid lines on it
figure III

Original picture

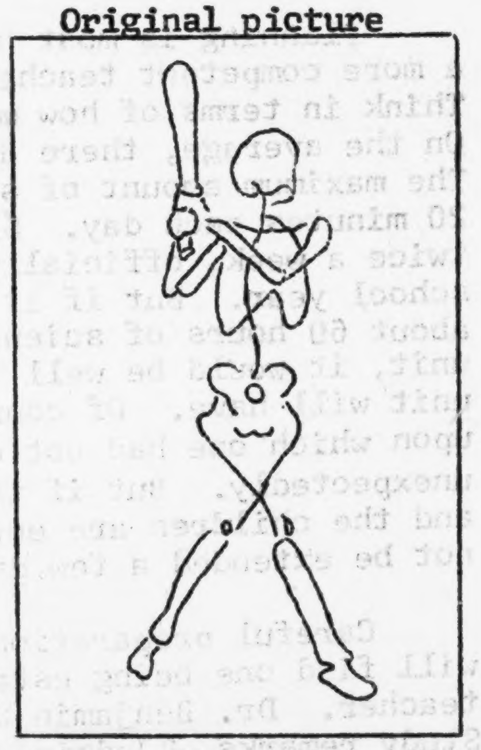
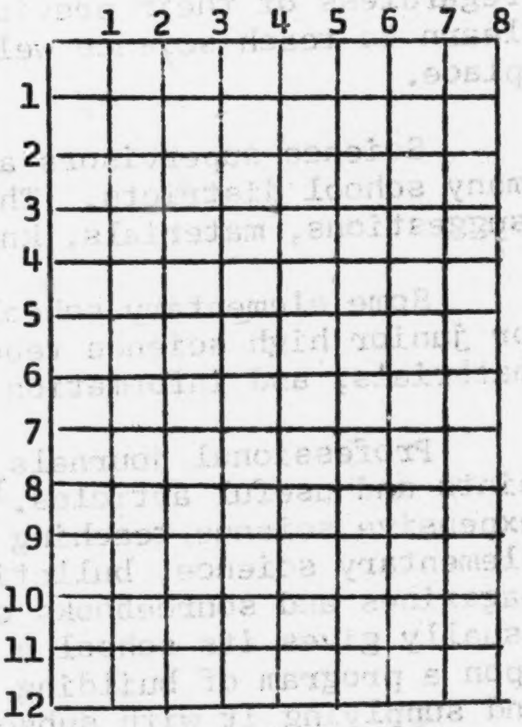


figure 1



Transparent template
figure II

The third year could be spent developing an effective gardening unit. If the school has a garden area, one might speak for it a year or two ahead. For many urban children, the chance to plant, cultivate and reap vegetables and take them home to eat is a brend new and exciting experience.

The fourth year may be spent in developing a unit on electricity and magnetism. Elementary electronics may be included for upper elementary grades. Each year, a new aspect of science may be developed, until the teacher is at home with several areas of interesting and immediately practical science units.

Planning is most helpful, too. An organized teacher is usually a more competent teacher. Thinking ahead tends to keep one ahead. Think in terms of how much science teaching will probably be done. On the average, there are about 180 days of teaching in a school year. The maximum amount of science teaching will probably be no more than 20 minutes each day. Some schools teach only one-half hour of science twice a week, officially. That would amount to about 36 hours in the school year. But if it is taught 20 minutes daily, one would teach about 60 hours of science in a school year. In setting up a science unit, it would be well to estimate how many 20 minute lessons each unit will have. Of course, the actual teaching will bring in things upon which one had not counted. Pupil interest may prolong a unit, unexpectedly. But if the objectives of the unit are being accomplished and the children are enthusiastic, there is no reason why a unit may not be extended a few days.

Careful preparation coupled with yearly growth and confidence will find one being established more and more firmly as a fine science teacher. Dr. Benjamin Nichols, Director of the Elementary Science Study remarks, "Judging by our trial classes, the most capable elementary teachers quickly become the most capable elementary science teachers, regardless of their previous training."[11] In other words, one may learn to teach science well if he is a capable teacher in the first place.

Science supervisors and consultants are available to help in many school districts. They are often a rich source of supply for suggestions, materials, know-how and general resource persons.

Some elementary school teachers have found dedicated high school or junior high science teachers that are happy to help with suggestions, materials, and information that may prove invaluable.

Professional journals and magazines may be watched for helpful hints and useful articles.[12] There are long lists of free and inexpensive science teaching materials, lists of books on teaching elementary science, bulletins on science education, journals and magazines and sourcebooks of experiments and demonstrations. The PTA usually gives its school a gift each year. If it could be started upon a program of building up a professional library in the school and supplying it with subscriptions to journals and magazines as well as purchasing the latest texts on elementary school science, the teachers of a school could be helped immeasurably toward developing a strong science program for any school.

11; Nichols, Benjamin, "Elementary Science Study Two Years Later," ESI Quarterly Report, Summer-Fall 1965, Educational Services Incorporated, p. 9

12. "The Instructor" and "Grade Teacher" for January 1965, have excellent elementary science sections in them. Textbooks such as Edward Victor's "Science for the Elementary School," published in 1965, have literally pages of source materials for helping prospective elementary school science teachers as well as those who are already teaching.

Of course, most materials are not designed with the particular needs of the culturally deprived in mind.[13] However, almost any materials may be adapted to the needs of these children.

Curriculum work in elementary science for the culturally deprived child is the purpose of Dr. Joseph C. Paige's Elementary Science Project at Howard University, Washington D. C.

Dr. Paige is directing a program in science for disadvantaged children in kindergarten through grade six. The program also includes the parents of the children. They get instruction in science, too. The materials are usable either in classes or outside of school as an enrichment program. Fifty "Elementary Science Activity Kits" have been produced.

The New Trends in Curriculum. (Innovation)

Major efforts in elementary science curriculum design are under way,[14] headed by leading scholars[15] of our colleges and universities. Most of these studies are only in the developmental stage. They are being tried out in experimental schools. Most of the materials are in print and are available for ones who would like to know how scientists themselves feel science ought to be taught at the elementary school level.

Just because something is new does not necessarily mean it is better. But refreshing ideas and new insights may be gained by taking the effort to make oneself aware of current investigations in the field of elementary science.

Congress, through its support of science education over the past several years, has identified the area of science education as vital to the national welfare and security. A teacher of the culturally disadvantaged child stands to gain advantage by enriching personal knowledge and skills for teaching science through exposure to these new ideas.

These programs are diverse in that some are highly structured, and others are extremely flexible.[16] There is a broad range of subject matter in some of the developmental studies. In others there is a single topic. Some are process oriented, some are content oriented, others are concept oriented. The following examples will give a general idea of the differences and similarities of the three orientations.

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[13] The ESI Summer-Fall, 1965, Quarterly Report, published by Educational Services, Incorporated, page 208, lists one program in science for disadvantaged children (K - 6), directed by Dr. Joseph C. Paige of Howard University. His experimental curriculum is called "The Elementary Science Project," Departments of Education and Physics, Howard University, Washington, D. C.

[14] Science Education in the Space Age, Superintendent of Documents bulletin, November 1964, p. 45

[15] Bruner, J., The Process of Education, Vintage Books, New York, 1960, p. vii

[16] Science Education in the Space Age, Superintendent of Documents bulletin, November 1964, p. 215

A process-oriented science unit of lessons will have both content and concepts. However, it will teach for process, primarily. The sequence of lessons develops process skills. It is not necessarily geared to a certain science content's developmental sequence. The content learned is not systematically related to particular scientific disciplines. For instance, at the 3rd grade level one may be teaching the process of measurement. A suggested process lesson plan may be as follows:

Unit: Standard Units of Measurement Sub-unit: Linear measurements
Lesson No. one Process: using measuring instruments
Concept: for measurement to be meaningful, there needs to be standard units Grade level: 3rd

Objectives:
- Pupil: to measure objects in the classroom
- Teacher: to teach the usefulness of standard units of measurement
- Behavioral: develop skill in using standard units of measure

Materials:
- 35 ungraduated foot rulers
- 35 ungraduated yardsticks
- 144 one-inch cubes

Motivation: Boys and girls, measuring is fun. Each one of us is going to do some measuring, today. You will each receive two measuring sticks and some blocks. We can use them to measure our desks, our tables, and even ourselves.

Procedure:
1. Have monitors pass out the ungraduated foot rulers. (Be sure not to call these measuring instruments by the name of "ruler" or suggest in any way their unit of measure.)
2. Monitors pass out the ungraduated yardsticks.
3. Have each child measure the "long stick" with the "short stick," by counting the number of short units needed to cover each long stick.
4. When the children have made their measurements have them report their results.
5. Have the children measure the tops of their desks with the "short stick." They may find there is not an even number of units and they may need some smaller units of measure. Discuss the problem. Someone will probably suggest using smaller units.
6. Pass out the one-inch cubes, 12 to each group of three or four children.
7. Let them experiment with the cubes. Some will probably lay them on the "short stick" and note that it takes exactly 12 of the smallest units to cover the short stick. Some of the children will conclude that the cubes are one-inch. Then they will see that it takes 12 one-inch cubes to measure the short stick so it must be 12 inches. Now they will be able to measure their desk tops more accurately, using both "feet" and "inches" as standard units of measurement to the nearest whole number.

Evaluation: Have several different lengths of dowels ready. Make some small enough so that they cannot be measured by the foot ruler. Each child will measure the dowel lengths and report their results. If the dowels are each numbered plainly, it is easier for results to be reported. If there is discrepancy in measuring results, the child making the error may be asked to check his results by carefully measuring again.

Vocabulary: units of measurement, inch, foot, yard, length, width

Generalizations: (tentative): Both large and small units of measurement are needed. Long distances would be difficult to measure with small units. A short length would be difficult to measure with a unit of measure that was too long.

Record of How the Lesson Went:

Date:________________

Successfully?________________Why?____________________________

Unsuccessfully?________________Why?____________________________

Indifferently?________________Why?____________________________

Suggestions that may make it a better lesson next time:____

____

____

Lesson number two in this series might deal with metric units as standard units of measure, following much the same kind of procedure. Lesson number three could deal with estimating lengths, widths, or heights and then checking to see how well one is doing.

Obviously, there are limitless variations and modifications of the linear measurement unit. Wide application may be made in practically every area of the whole curriculum.

After a week spent on the process of measurement, one might turn to the process of communicating. Some of this has already been done in reporting results. But perhaps a week spent on graphs and charts as means of communication would be useful.

In the process unit, it is clear that both content is involved and concepts are being learned. However, the stress is on the process in this method of teaching science, as described above.

For fine lessons, thoroughly planned and tested by experts, the American Association for the Advancement of Science has experimental editions of process approach lessons for each grade level of the elementary school.[17]

Educational Services Incorporated (ESI) of Watertown, Mass., also is doing experimental work in elementary science. Their Elementary Science Study (ESS) is developing process-oriented materials that are a little more highly structured than the lessons being developed by AAAS.[18] The Elementary Science Study has kits of materials for teachers and pupils. Everything that the child needs for the particular unit is provided. In the teacher's kit there are carefully prepared manuals instructing the teacher precisely how to proceed with the lessons. The ESS lessons may be taught at any level of elementary school. These materials may also be used with retarded children.

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[17] SCIENCE - a process approach, The American Association for the Advancement of Science, 1515 Massachusetts Avenue, N.W., Washington 5, D. C.

[18] Educational Services Inc., 108 Water Street, Watertown, Mass. 02172

Next we will consider the content-oriented approach. In this kind of unit planning, the content to be learned will be systematically related to a particular scientific discipline. In addition, both process and concept will be stressed.

A good example of this kind of approach is found in the work of J. Myron Atkin and his associates. They are developing excellent materials for elementary science in the field of astronomy.[19]

The work of Atkin and his associates is especially adaptable for students with above average IQ. The lessons in this series tease the pupil to think. We have introduced these lessons in astronomy to teachers in our graduate classes. We have yet to find one who did not come back with glowing reports about the high student interest generated by these lessons. The pupil manuals are interestingly written and illustrated simply and often humorously. They are carefully designed to bring the child to the point. The lessons are already planned and set out step by step in the pupil manual. The Teacher's Guide carefully coaches the teacher on the manner in which each lesson in the pupil's manual should be taught.

Another source for help in teaching lessons on astronomy as well as space, is the National Aeronautics and Space Administration (NASA). A teacher's kit is available for the asking. In establishing NASA, Congress wrote into the law that it shall have the responsibility for disseminating information. Consequently, it has an Education Programs department. The sample lesson following is a content-oriented lesson worked up from information gleaned from pamphlets distributed free by NASA.

Unit: Earth Sciences Sub-unit: Astronomy Lesson: "Star Dust"
Concept: Material from outer space is continually falling onto the earth. Grade level: 6th
Background Information for the Teacher:

1. If you look up into the sky on a clear night, you may see a few meteors or "shooting stars."
2. These streaks of light come from the small dust - or sand-like meteoriods streaming into the atmosphere of the earth.
3. They are traveling at more than 25,000 miles per hour.
4. As the meteoroid burns, small bits (micro-meteoroids) separate from it and drift to earth.
5. On the earth, the particles can often be picked up with a magnet.
6. Scientists have estimated that over 100 tons of iron nickel dust falls on the earth each day.
7. Micro-meteoroids are a nuisance to spacecraft.
   a. They are fast-traveling bits of space-dust.
   b. They dent and puncture balloon-like structures.
   c. They scratch and abrade the smooth surfaces and window-like areas of other craft.
   d. They slow down satellites making them spiral back into denser atmosphere and burn up.

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[19] University of Illinois Elementary School Science Project % J. Myron Atkin, Professor of Science Education, University of Illinois, Urbana, Illinois

8. A small magnet dragged on the end of a string along a gutter where water runs will pick up particles.
   a. Some acientists estimate that 10% of the material collected on the magnet will have come from outer space.
   b. The rest of the material is probably industrial waste from factories.

Objectives:

Pupil: To find some stardust.

Teacher: To teach that materials from outer space are falling on us continually.

Behavioral: To develop ability to explain phenomena on basis of logic.

Materials: None

Motivation: Boys and girls, how many of you have ever handled things from outer space? (See how many think they may have, and let them explain.) Really, you all have. How many of you have ever noticed dust on things around school or around home? Well, some of that was stardust! Let's see if we can figure out how that would happen.

Procedure:

1. We will talk about things we have all observed. When you think you know how stardust gets down to us, you raise your hand and we will let you explain it to the rest of the class.
2. Let's see the hands of those who have looked up into the sky at night and seen "shooting stars."
3. What do you suppose they are?
4. Why do we see them at night, only? Do you suppose there are shooting stars in the daytime, too? Why don't we see them?
5. How fast do you suppose shooting stars travel? How long would it take one to travel around the earth at the equator? Do our astronauts travel that fast? (Our Gemini VI and VII astronauts travelled about 17,500 miles per hour.)
6. What makes a shooting star shine so brightly? (It has come into our atmosphere and friction has set it afire. It is burning up.)
7. After some discussion on these points, if the children have not already developed a logical explanation for stardust, it might be well to volunteer some of the information mentioned in the teacher background material, so their concepts of abrasive dust in space has a reasonable basis of understanding.
8. Question the children about what they think stardust does to spacecraft.

Follow-up: Have the children drag a horseshoe magnet on the end of a string through gutter water and bring the materials they pick up back to class. Discuss what part of it may be star dust.

Evaluation: At this grade level, most of the children should be able to explain, in writing, where stardust originates and how it gets to earth, if the lesson has not been too hastily taught.

Vocabulary: shooting star, meteor, micro-meteoroid, spacecraft, space-dust, cosmic dust

Generalizations: (tentative): As a meteor burns, small particles separate from it and drift slowly to earth. We may see these particles as dust. We may pick up some of these particles with a magnet. This cosmic dust is a nuisance to spacecraft.

In conjunction with astronomy, one may easily introduce lessons on manners and morals. Many intriguing stories and myths are connected with stars and star groups (constellations). No matter what time of the year we may be teaching, there are constellations visible at night. Children will look for these star groups, when motivated, and will quickly learn to identify many of them.

An incidental, but worthwhile benefit of an enjoyable experience with star myths as well as facts is that it prepares the pupil's mind for a greater appreciation of classical poetry, art and sculpture based on mythological stories. Early introduction to the meanings of symbolism promises to enrich experience throughout life.

Excellent books are available for the teacher's research in star mythology. Public libraries usually have several on both the child's as well as the adult's level. One that the writer has found most easy to use is by Oral E. Scott.[20] This book gives scientific astronomical data, the myths linked with the constellations, and the interpretation or meaning of the story connected with each star group. It is written on the adult level. Elementary school teachers would have to rewrite each story. Not all of the stories have particular morals or manners to teach, some of them merely show how ancient some of our present traditions really are and how they started. For instance, here is the story of the constellation Lepus, the Hare.

> Just below Orion is the constellation of the Hare. It is under the foot of the giant. Since Orion loved to hunt wild animals of the forest and field, the Hare is represented as cowering at his feet.
>
> The moon was associated with the Hare in close identification. It is the phase of the moon that decides the date of our Easter. There is still a close connection between rabbits and Easter eggs. Eggs were regarded as symbolic of creation or resurrection from very ancient times. Rabbits and eggs were very closely associated with the Vernal Equinoxial Festival (arrival of spring). There have been times and places even crediting the rabbits with actually bringing the Easter eggs.
>
> The ancient name for the moon was Astarte. In old English this same name was Eoster. It is now called Easter. Easter is just another ancient name for the moon.

In this, the space age, television, games and toys all capitalize on the space theme. Motivation is already built in. The children are interested.

Even the culturally deprived child has heard of Hercules or Jason and the Argonauts. Beautifully illustrated children's books on these themes are available.

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[20] Scott, Oral E., Stars in Myth and Fact, Paxton Press, Caldwell, Idaho, 1943

The stories of Hercules are symbols of inward strength - the strength of the intellect, strength of character, the strength of right over wrong, of good over evil.

The boys and girls can understand that the ancient people had no books. The heavens were their books. The stars and constellations were their illustrations. People long ago had a problem. They learned important things that they wanted to preserve for future generations. They did not read and write. So they wove fanciful tales (myths) about star groups. These stories would be the preservers and bearers of truth to all those not yet born. The stories contain principles of the forces of good and evil that are fighting for supremacy in every man's own life. For example, one of Hercule's 12 labors was to subdue the Hydra, that beast that was a destroyer of men.

Hercules found Hydra. He swung his club and knocked off Hydra's head. But two more grew in its place immediately. Hercules swung again and knocked off another head. Two more appeared. The harder Hercules fought, the more of the dreaded heads he seemed to be creating. Finally he came upon the idea of taking a hot iron and searing over each place that he knocked off a head. This proved effectual and Hydra was soon conquered.

What is the meaning of this story? Every child in school can learn its meaning, and enjoy it. Just ask a child what happens when someone accidentally hits him or hurts him on the playground. The usual response will be - "I hit him back." Ask him what happens then. "He hits me back." Ask what happens then. "I hit him again, etc." Before it is all over, friends may be involved and a "many-headed Hydra" has developed to destroy friendships, peace, play time, and tempers, as well as probably costing some kind of detention or punishment.

Then the children see that Hercules learned to "sear" those "heads." He did not allow them to grow. He was inwardly strong enough not to retaliate. He learned that it was not worthwhile to pay back meanness for meanness. The children realize, too, that it takes a lot more strength to resist retaliating than it does to trade blows. Chaos and anarchy are the result of taking the law into our own hands and trying to make our own style of justice.

Children from different socio-economic backgrounds will respond differently to hostile stimuli. According to Mouly[21] the upper and middle class individuals are more prone to use language as a tool to express their anger. In the lower socio-economic classes fighting is the more common method of expressing anger. But however it is expressed, it is the ancient's many-headed Hydra before it is through. Interesting stories stir the imaginations of children and fire their understanding about the relative futility of retaliation in any form. It is the teacher's responsibility to sow the seed of proper conduct in the minds of all children. It may take years for it to bear fruit. Don't expect too much in the way of immediate results. The teacher's job is to lead. Learning can be done by the pupil, alone.

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[21] Mouly, G. J., Psychology for Effective Teaching, Holt, Rinehart and Winston, New York, 1962, p. 122

The third classification of science lessons that we have mentioned is that kind of lesson which makes the concept central. The concept may be illustrated in various ways and from any "content" area. As an example, one may teach for the concept of protective coloration. Illustrative applications may be found among insects, animals, birds, etc.

To initiate a unit on protective coloration at the first grade level one might begin with a suggested lesson as follows:

Unit: Living Things **Sub-unit:** Protective coloration
Lesson No. one
Concept: Some animals, insects, and birds are protected by being of the same general coloration as their environment.
Grade Level: First
Objectives:
Pupil: To see how many beans he can find.
Teacher: To give each child a practical, empirical experience with protective coloration.
Behavioral: To stimulate keener observational habits, to look for examples of protective coloration in nature.
Materials: dried beans dyed different colors with food coloring
50 dyed grass green
50 dyed red
50 dyed yellow
50 dyed blue
Motivation: Tell the class you are going to take them outside to a patch of green grass and play a game. You are going to see how many beans they can find.
Procedure:

1. Tell the children we are going to see who has the best eyes.
2. Show them the different colored beans. Let them guess, or just tell them how many of each there are.
3. Explain that we are going outside to conduct an experiment. We are going to throw all the beans in the grass, then at a signal we will give one minute to see how many beans we can pick up.
4. Discuss procedure for leaving room, where we are going, why we are going, what we will do when we get there and the rules of conduct.
5. Line up in preparation for departure.
6. Walk quietly to a grassy spot in the school yard or an accessible spot near the school.
7. Have the children form a large circle.
8. The teacher shows the beans again and tells the children they will be scattered in the grass while they all close their eyes.
9. The children close their eyes and the teacher scatters all the beans in the grass, giving wide coverage within the whole circle.
10. Children open their eyes at prearranged signal and begin picking up all the grains they can find.
11. After one minute call the children into formation and march to one side, away from the area where the beans are and count the number retrieved. See how many of each color have been found, and return to the classroom for evaluation.

Evaluation:

1. Inquire by questioning to see if the children understand why fewer green beans were found.
2. The question will probably be answered in terms of what they have learned about protective coloration.
3. For application, ask questions such as:
   a. Why is a polar bear white?
   (Incidentally, a polar bear is all white except for his black nose. Polar bears are also very clever. They have been seen in hunting posture, scooting themselves over the ice, holding their forepaws over their black noses so they would not be seen.[22])
   b. Why does a snowshoe rabbit change color in the winter?
   c. What does the shape and color of a katydid do for it?
   d. What color is a fish's underside? What color is its back? Why?
   e. Etc.

Vocabulary: protective, camouflage, blend, coloration, enemy, natural

Generalizations: (tentative): Objects the same color as their surroundings are harder to see. Many animals are protected by their coloring.

There are also similarities in the curriculum revision investigations. The trend seems to be that:

1. There is little or no attempt at systematic coverage of broad ranges of topics or concepts generally found in curriculum documents from State departments of education.

2. Activities are centered in the areas where the individual child may make empirical observations.

3. The individual child is enabled to participate in depth studies.

4. The child is given experience in processes inherent in discovering knowledge of his environment (kindergarten through third - observing, classifying, using numbers, using space/time relations, communicating, measuring, inferring, prediction; and fourth through sixth - formulating hypotheses, controlling variables, experimenting, defining operationally, formulating models and interpreting data).

5. A general emphasis seems to be to uncover a field of science by digging deep and making personal examination.

6. There seems to be no attempt at all to perpare children for the traditional high school courses. It is an attempt to provide a more basic science education for all pupils.

7. They all require active participation by each child. As many senses as possible are used in each activity. For example, traditional demonstration technique has the teacher or a pupil show that a white powder contains starch by mixing it with an iodine solution. The trend, today, is to have samples of seven or eight different white powders available. The children are instructed to identify them. This activity will call for several chemical tests. Each child will taste, feel, smell, observe. Instead of being told, the child must think for himself and arrive at his own conclusions.

8. The program designs are an attempt to direct each child to perceive basic concepts and relationships for himself.

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[22] See Nature and Science, Vol. 3, No. 5, Nov. 1965; published for the American Museum of Natural History by the Natural History Press.

9. The new curriculum designs attempt to develop self-learning skills in the child. If learning is to be for life, the child needs to be trained in skills that are not innate but which are developed through practice.

10. The trend in science activities tends to utilize investigations naturally suited to children. Natural interests provides a dynamic starting place. There is a high positive correlation between interest and learning.

11. No longer is there a concentrating only on the formal information that is being taught. There is a developing of behavioral changes (ability of children to develop a strategy of attack, for instance).

12. Children are being given a chance to make mistakes. They are learning that there is such a thing as a "good" failure. Sometimes we have to learn how things do not go before we learn how they go.

General information about the curriculum studies may be kept current by any teacher. Most of the studies print news letters at intervals during the year. They invite teachers to get their names on the mailing lists. There is a great deal of information available, free. A clearinghouse of information about science curriculum development projects for elementary, junior high and senior high schools has been set up in cooperation with the University of Maryland. Three reports have been published - May 1963, March 1964, and March 1965.

The National Aeronautics and Space Administration (NASA) has several regional offices across the United States. Science education programs have been developed by the education branch. Upon request, NASA is authorized to help teachers or schools or districts with development of an up-to-the-minute space-age science program. Representatives stand ready to bring a sample lesson to a class for a teacher, or give a program to the assembled school, or even conduct in-service training for teachers.

What About the Child?

All children need experiences of success. This is especially true of those who have experienced repeated failure. The research by Charles in which culturally deprived children were found to be about two years behind in science education, indicates that by all probabilities, in a traditionally conducted science class these children will not have had much success.[23]

Characteristically, these children seem to have a relative lack of interest in school (often because of experiencing so little success); they are generally less proficient in language skills and communicating; they have a relatively limited range of experiences upon which to draw and they give evidence of having a low self-image.

Elementary science can help to intervene and reverse these tendencies. It can capitalize upon the natural inquisitiveness with which all children seem to be born. Grades 1 to 5 have been cited as the period of a child's most rapid learning in the school situation.

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[23] Charles, Carol M., Op. cit.

A teacher's opportunity to free this capacity is unlimited. Attempt to determine where the children are and lead them from there. While it is true that the culturally deprived do not have as rich a background, nevertheless, they bring with them a tremendous amount of preschool influences. If learning is defined as everything that is acquired since birth, then probably even for the deprived, what they have already acquired outweighs all the rest that will ever come. They have learned before they come to school. It has not been formal learning. But they have learned because they have been interested. It may be possible that formal learning may be too formal to be interesting, especially for the educationally and culturally deprived. Perhaps determining their areas of interest and capitalizing upon that, may be a good starting place for beginning to lead them to where we hope they will want to go.

Active participation on the part of every individual will enhance any program. Generally around the school and home there is abundance of materials available so that with a little effort, enough materials for each pupil can be made available for active, personal manipulation. Interest is more highly aroused by firsthand experience. Learning tasks with immediate, tangible goals are more effective in creating and sustaining interest. If a strong interest is initiated in science, it may cultivate interest in school generally.

The culturally deprived child needs successful experience not only in exploration but in communicating. Skills of non-verbal communication (listening, observing, graphic recording, and simple reporting) may be used effectively. Science activities such as labeling of specimens, models, and charts can furnish basic reading experiences.

Steadily increased ranges of experience may be furnished the culturally deprived child. The place to begin is with things familiar to the disadvantaged child. Opportunities for abstract thinking may be provided, but will develop slowly, at the individual child's own rate.

The deprived child often has a low self-image. He does not recognize his own potential. He has little drive from within to reach a higher level. A science program geared to this kind of child's abilities can help build up a stronger self-image by providing motor-oriented tasks where greater improvement is possible and where greater self-confidence and more success may be experienced. Highly structured lessons, to begin with, taught in an informal, sympathetic but non-patronizing atmosphere seem to be necessary qualities for a high level of success in teaching the less privileged child.

The science program will need to be geared to the psychological aspects of the children's needs and motives. A proper understanding of the developmental and environmental influences on the child will help the teacher better understand the particular needs as well as the reasons for certain problems. When we understand, we tend to be more sympathetic. If we know how the deprived child learns, we can adapt our teaching to that particular method.

Methods for Teaching the Culturally Deprived:

In general, it will be found that culturally deprived children have a different attitude toward school from that of the middle and upper class children. Novak found that parents are often hostile to school values. If the parents provide any academic or social motivation for their children at all, it is extremely limited.[24] Newton claims that there is a general disenchantment, on the part of the culturally deprived, with any type of book-centered learning. It is displayed by taking the form of aggressive, defensive or dissociative behavior.[25] Deutsch remarks that the educational level of the adults tends to be quite limited. In the home there is likely to be a nearly complete absence of books.[26] Slater says that books other than comics are conspicuously absent and that parents devalue education. He also mentions that nutritional, medical, and dental needs go unattended. Gross observations of underachieving disadvantaged children at school will show that they generally learn very slowly, are frequently passive-dependent, do not respond to the usual classroom stimuli, exhibit minimal intrinsic motivation for learning and adjust poorly to school. They are prone to act out.[27] Metfessel and Foster mention that culturally disadvantaged children tend to learn more readily by inductive than deductive approaches, learn less from what they hear than do middle class children, are frequently symbolically deprived, need to see concrete applications of what is learned related to immediate sensory and topical satisfactions, tend to persevere longer in a task when they are engrossed in a single activity, tend to have poor attention span and consequently great difficulty in following the orders of a teacher, have generally had little experience in receiving approval for success in a task, an assumption on which the school culture is organized, and need assistance in perceiving of an adult as a person from whom you ask questions and receive answers - an assumption on which the school culture is organized.[28] Larson observes that these children are likely to develop a concept of themselves which will not foster success in school. They will probably learn to devalue themselves as scholars or students.[29]

[24] Novak, Daniel, "Counseling Culturally Disadvantaged Requires Special Understanding: Relationship of Confidence Basic to Success." Chicago Schools Journal, 45 (May 1964), pp. 366-72

[25] Newton, E.S., "Planning for the Language Development of Disadvantaged Children and Youth,". Journal of Negro Education, XXXIII, No. 3 Summer, 1964, pp. 264-74

[26] Deutsch, M.,"Social and Psychological Perspectives on the Development of the Disadvantaged Learner," The Journal of Negro Education, XXXIII, No. 3 (Summer, 1964) pp. 232-44

[27] Slater, Daniel, "A Preliminary Proposal for an Educational Project to Further the Educational Adjustment of the Disadvantaged Child," Paper read before the California Association of School Psychologists and Psychometrists Convention in San Francisco, California, March, 1965. (Mimeographed)

[28] Metfessel, N.S., and Foster, J.T., "Preschool Program-Critical Incident Observation Record," Project Potential: Center for the Study of Educationally (Culturally) Disadvantaged Youth. University of Southern California, Los Angeles, California: no date (b). (Mimeographed, 20 pages)

[29] Larson, Richard, and Olson, James L., "A Method of Identifying Culturally Deprived Kindergarten Children," Exceptional Children, 30 (November, 1963), pp. 130-4

The institute for Developmental Studies at New York Medical College has employed a variety of devices to stimulate lower class children to verbalize their experiences. For instance, children are given a clown whose nose lights up because it is happy when they talk. Role-playing experiences are provided for these children to initiate talking about what they have seen. In this spontaneous, fantasy-and-action-oriented situation lower class children are very verbal. Their responses, though more unstructured than those expected of middle class children, show considerable freedom and creativity in word associations.[30]

From the findings mentioned above, it is evident that the methods and objectives one might have when teaching a middle class schoolroom, will have to be modified and adjusted to the psychological needs of the culturally deprived. For the most part, when teaching the culturally deprived, behavioral objectives should be kept in mind. Methods to produce the desired objectives will be used.

Some of the behavioral objectives toward which we may direct units and lessons in science may involve predicting, experimenting, describing, measuring, observing, comparing, organizing, classifying, communicating, applying, interpreting, inquiring, referring, charting, graphing, discussing, reporting, questioning, listening, cooperating and persevering, for instance.

Elementary science happily provides many and varied opportunities for introducing interesting environmental phenomena to a child. Concrete experiences may be provided easily for each pupil. Parents of culturally deprived children may be hostile toward obviously academic pursuits. A more indirect approach through elementary science learnings, which appear more practical to the parents, may be used.

Because nutritional needs are apt to go unattended in the culturally deprived home, an interesting science unit on gardening may serve as a basis for learnings concerning nutrition and health.

The school's influence and purposes should go beyond the goal of just teaching the students in the schoolroom, itself. As much as possible, the learnings need to involve the homes, too. There is no formula for successful involvement of the whole family. This is where the individual teacher's ingenuity, patience and genuine concern for making a contribution to advancing the well-being of the culturally deprived will be evidenced.

In our college classes for teaching science methods we have developed a unit on gardening which may serve to suggest a place to begin as well as a way. This unit on gardening probably can be adapted to any grade level in the elementary school, with modifications:

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30. Riessman, Frank, The Culturally Deprived Child, New York: Harper and Rowe, 1962

Unit on Seeds and Plants

Overview: Young children, for the most part, are naturally interested in growth and watching the growth of plants is an especially rewarding way for it is a tangible method demonstrating evident growth that may be visible within a few days.

The children should be encouraged to experiment with seeds and growing plants, to learn about the needs of seeds and growing plants, to grow seedlings indoors and transplant them outside in the school garden or even at home when the plants are ready. They can raise house plants in the school room. They can plant home and school gardens. The extent to which these activities may be carried on is limited only by school facilities, the interest of the pupils, and especially, the interest of the teacher.

Plants are good for the soil. They prevent erosion. When they die they become fertilizer for the soil.

Plants are important in the lives of people. They purify the air by taking out the carbon dioxide and producing oxygen. Paper is made from trees. Cotton and linen cloth is made from plants. Homes may be built of lumber. Food for all living things comes from plants.

Basic Science Learnings

Developmental Sequence of Understandings:

Kindergarten: Plants are living things.
There are many different kinds of plants.
People grow some plants for food.

Grade One: Most plants are helpful.
Some plants are harmful.
Plants grow in different places.
Plants change with the seasons.
Some plants are planted by man.
Some plants grow wild.

Grade Two: Some trees lose their leaves during part of the year.
Most plants have roots, stems, and leaves.
Most plants must have sunlight, air, and water.
Some plants grow from seeds.
Some plants grow from bulbs, stems, roots, and leaves.
Seeds are dispersed in many ways.
Each plant produces a plant of its own kind.
Plants add beauty to our lives.
Some animals help in the dispersal of plant seeds.

Grade Three: Each part of a plant serves a purpose in the growth of the plant.
Plants need the right kind of soil for proper growth.
Plants need different amounts of sunlight and water.
Man uses plants in many ways.
Some plants provide shade and shelter for animals and other plants.

Concepts That May Be Developed:

- There are many kinds of seeds.
- Seeds vary in size.
- Seeds vary in shape.
- Seeds vary in color.
- Seeds come from plants.
- Young plants grow from seeds.
- Seeds reproduce the plants which bear them.
- Seeds may be scattered in many ways.
  - Seeds may be scattered by water.
  - Seeds may be scattered by wind.
  - Seeds may be scattered by animals.
  - Seeds may be scattered by gravity.
- We give names to seeds according to the way they are scattered.
  - Flyaways - dandelions, willow, cottonwood, milkweed, and milk thistle.
    - Flyaways have hairs which help them to be carried by the wind.
  - Sailors - maples, pines, elms, ash trees.
    - Sailors have wings and are carried from parent plant by the wind.
  - Tramps - Spanish Needles, burdock, wild forget-me-not.
    - Tramps have hooks or prickles which catch the hair or fur of animals or on our clothing (they steal a ride).
  - Jumpers - Impatiens and bird-of-paradise (Poinciana).
    - Jumpers shoot away from the parent plant.
  - Swimmers - sedges and rushes.
    - Swimmers have an envelope filled with air around them so they go floating down a stream.
- Seeds need water in order to grow.
- Some seeds come up faster than others.
- Seeds absorb water.
- Seeds exert force.
- Plants can have too much water.
- Drainage is important in plant growth.
- Plants need proper temperatures for growth.
- The amount of air in the soil is important for plants to grow.
- The stems transport water to the plant.
- Plants need light to be healthy.
- The important parts of a plant and the purposes they serve are:
  - Roots:
    - Roots of most plants turn down.
    - Roots of most plants anchor the plant in the soil.
    - Small roots absorb water from the soil that the plant needs in order to make food and to grow.
  - Leaves:
    - Leaves are usually on the upper part of the plant.
    - Leaves have two major parts: (1) The blade (expanded portion) and (2) The petiole (slender part that attaches the blade to the stem).
  - Stem:
    - The stem connects the plant's root system with the leaves. (e.g. short, as in a carrot top, or tall, as in a tree).

Flower:

The flower is usually colored and easily seen.

Flowers of different plants are of different shapes and different colors.

Within the flower is the part that will grow into the fruit.

Fruit:

Inside the fruit will be found one or more seeds.

We eat different parts of many plants.

- Roots - carrots, beets, turnips, radishes
- Stems - asparagus, onions (a bulb is a type of underground stem)
- Leaves - spinach, cabbage, celery, lettuce, chard
- Flowers - cauliflower, broccoli
- Fruits - tomatoes, eggplant, cucumbers, many kinds of squashes, pumpkin
- Seeds - beans, peas, corn

Motivation

Riddle:
I have no eyes and I never had;
I have no legs and I never had;
I have no mouth and I never had;
But once I was buried alive.
Without any eyes, I could not see at all;
Without any legs, I could not crawl;
Without any mouth, I could not call;
And I go out all by myself!
Who am I? (A Seed)
(Author unknown)

Bulletin Boards that emphasize flowers and the beauty of nature, as well as instructional bulletin board material prepared by the teacher (see page 81.)

Films: "Seeds Grow Into Plants," "Planting our Garden," "Gardening," "Taking Care of Our Garden," "Wonders of Plant Growth"

Filmstrip: "Finding Out How Plants Grow"

Commercial pictures of common garden flowers, common garden vegetables, and wild flowers

Slides of California native flowers, California wild flowers, common garden flowers and other plants of interest to children

Books: Science Around You, Exploring Science, Leaves, Winter is Here, Fall is Here

Reading stories: An E.G. is the Carrot Seed, by Ruth Krauss

Taking a nature walk (See Blough for planning[31])

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31. Blough, G.O., and Schwartz, Julius, Elementary School Science and How to Teach it, 3rd Ed., 1964, Holt, Rinehart and Winston, p. 31 (Field Trips)

Music: Sing and dramatize songs such as "Like a Leaf."

Display center: Seeds sprouted on blotting paper in a glass tumbler may be observed easily. The seeds will not grow for very long under these conditions, but as they germinate and begin to grow the children can observe them carefully and see the changes that take palce.

To use this method, cut and roll a piece of white blotter into a cylinder to fit against the insides of the tumbler. Fill the inside of the glass tumbler with cotton and place the seeds between the glass and the blotter. Use more than one kind of seed. Keep the cotton moist. (If no cotton is available, soil may be used as a core.) To keep the seeds in the dark, cut black paper to fit around the outside of the tumbler and hold it in place with a rubber band. Take off the black paper to observe the seeds and stage of germination. After viewing, put the black paper back in place.

Flannel Board Story: (written with large print)

Let's Plant a Bean

Every year farmers plant many, many seeds that grow and give us the food we eat.

The farmer puts the seed into the ground. The rain falls on the earth and wets the seed. The sun warms the earth. Before long, tiny plants come pushing up through the ground. Would you like to know what goes on beneath the ground before the plant comes peeping out?

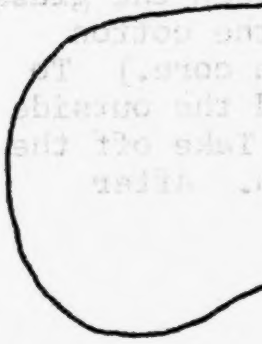
The above part of the flannel board story may be duplicated and handed to each child for reading in the classroom as an introduction to the flannel graph presentation, itself.

After the children have read the story, the flannel graph story may be told to help the children understand how bean seeds become plants.

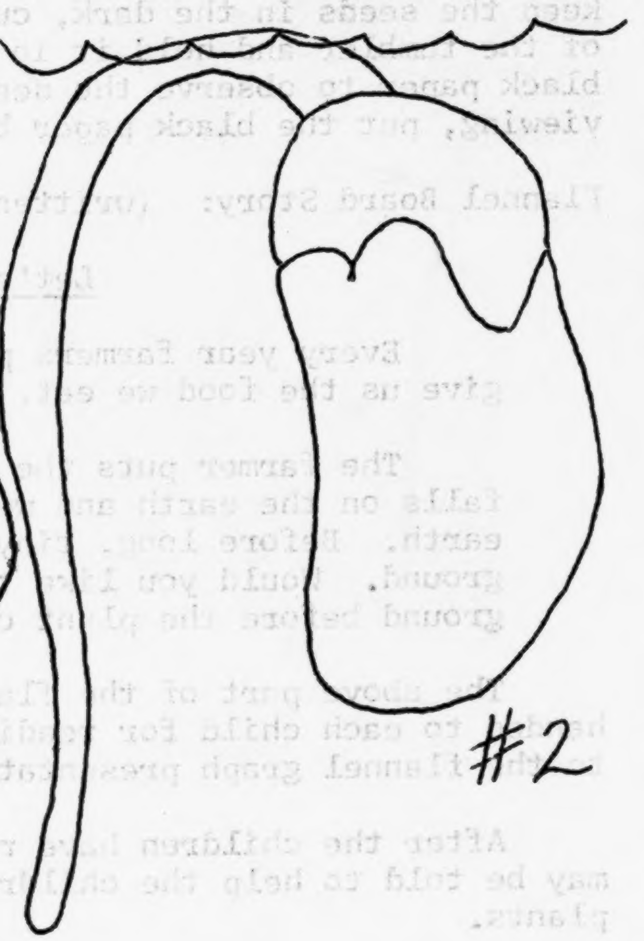
First the seed (picture #1) is planted. Of course, you realize that this seed on the board is much larger than the bean seed would really be. When it is first put into the ground, the seed is hard. The outside of the seed is tough. Then, after it has been in the ground a while, the moisture from rain or from watering the garden softens the bean. The bean splits. Out of the split comes a tiny, thin, fingerlike growth (Picture #2) that turns downward and starts to form roots (picture #3).

After the roots are formed, they push the remaining part of the seed upward through the ground to the outside and into the sunlight. When you plant your beans here in class and they sprout out of the dirt, you will see the remains of the seeds clinging to them (picture #4).

Now the plant is in the sunshine and air. The roots get strength from the soil and feed the plant. The plant grows full and green (picture #5). (For pictures, see following pages.) Adapted from Curriculum Laboratory, Bassett Unified School District.



#1



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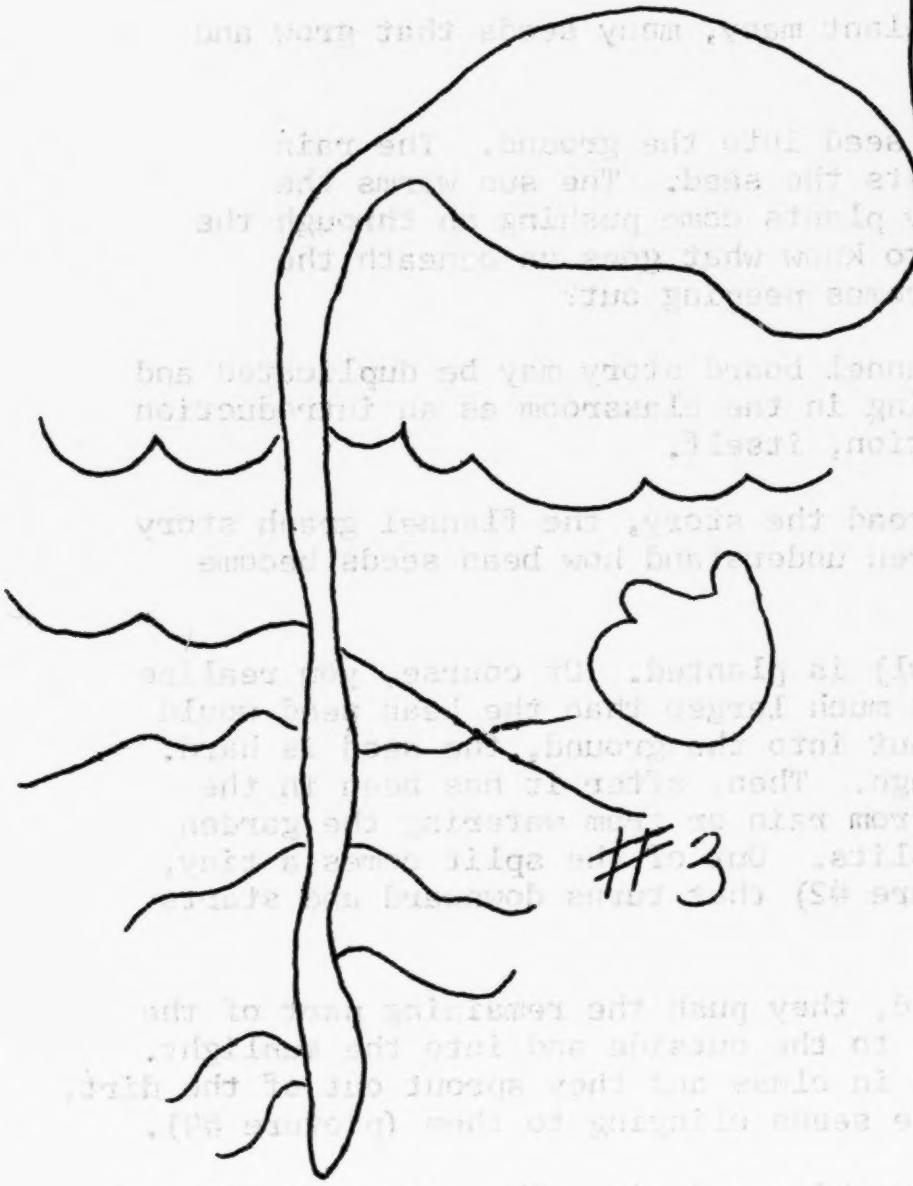

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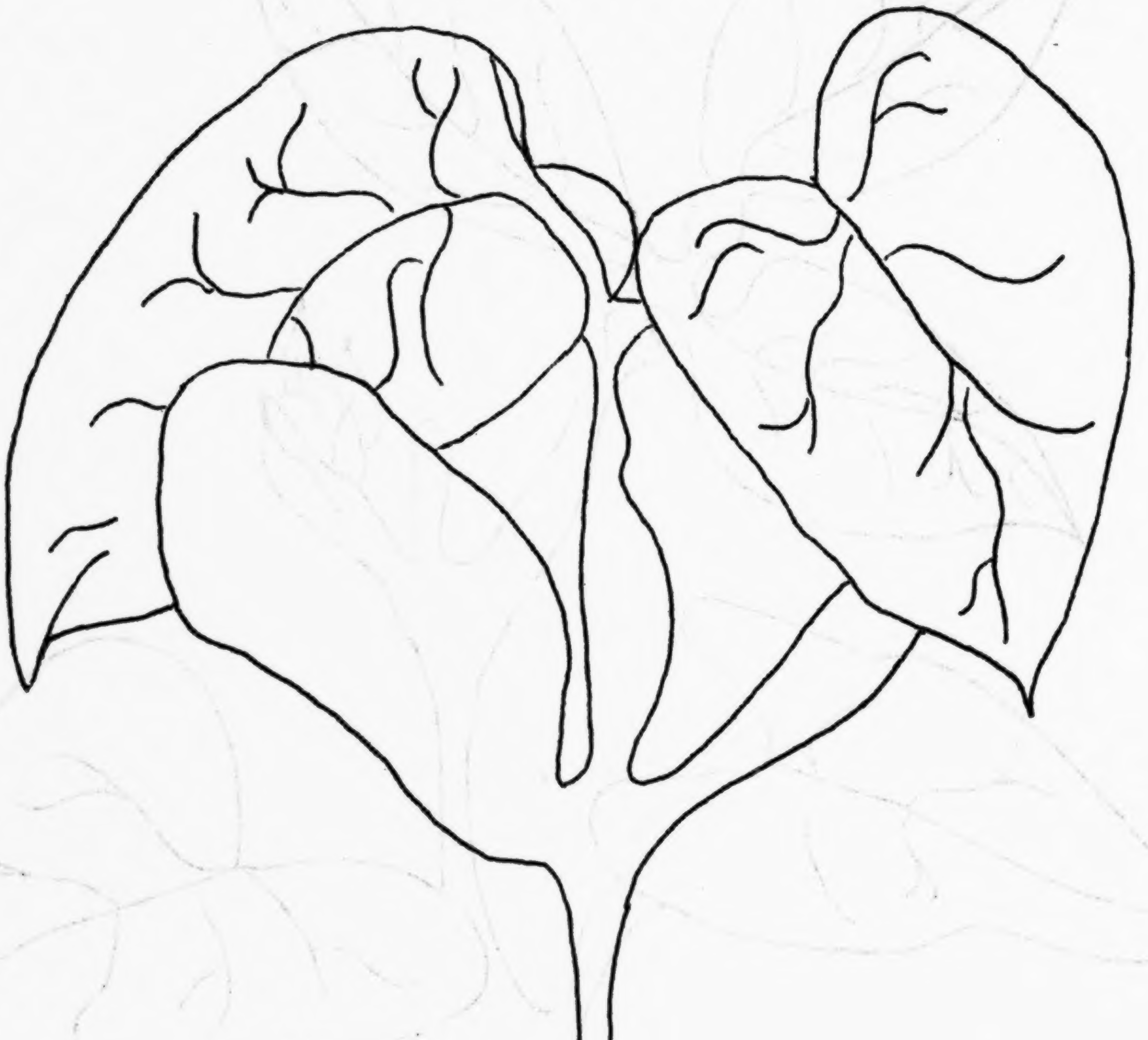

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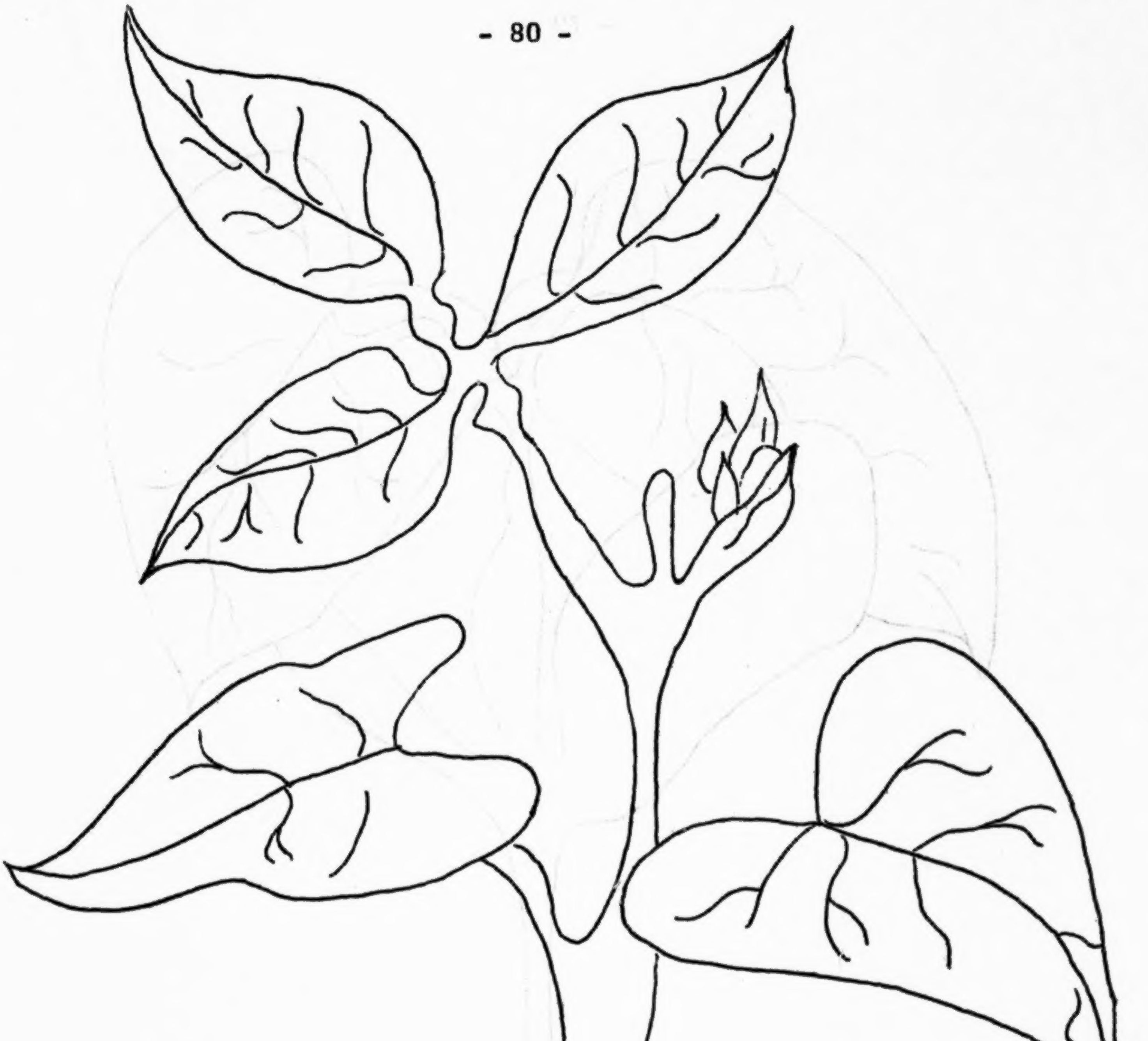
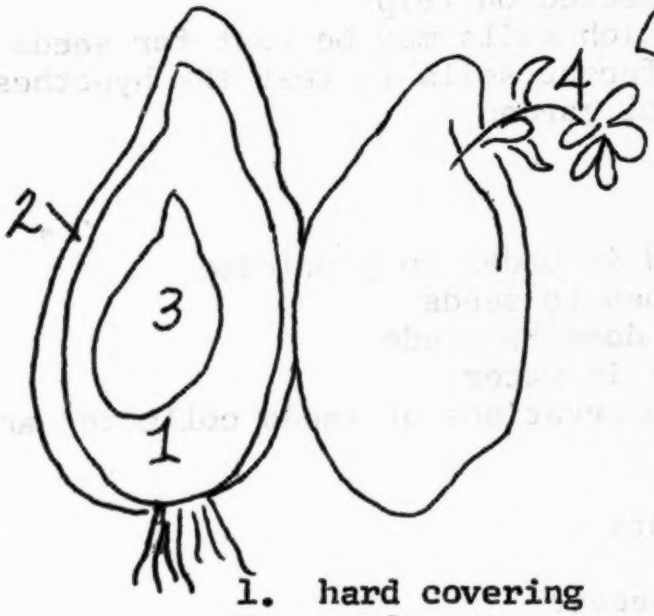


#5

Bulletin Board Idea

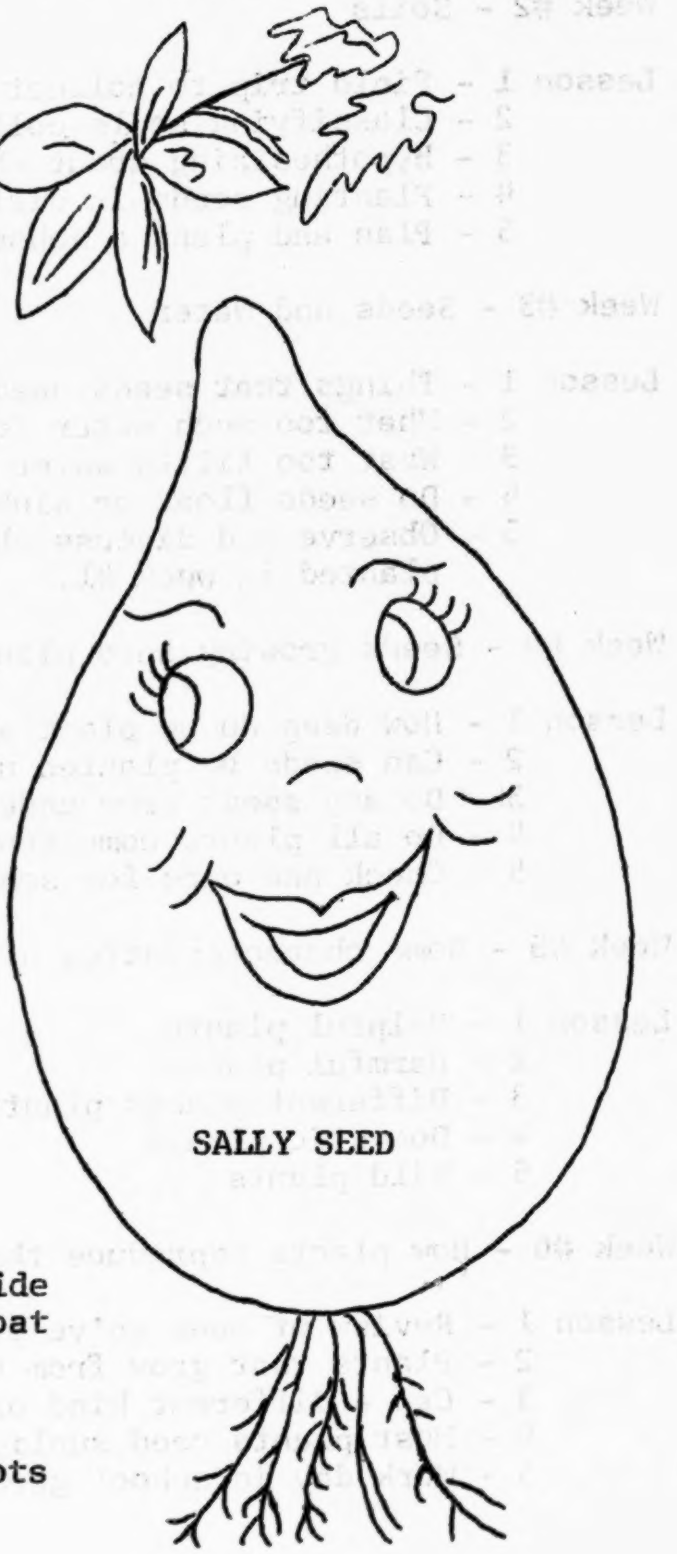
Sammy and Sally Seed have essential needs for growth, such as air, water, soil, and warmth. Nature has hidden within the outer protective shell a tiny new plant as well as a supply of food for it to grow on. When a seed contacts the ground (whether placed there by man, the wind, animals or birds) the warm soil and the moisture help the new plant begin its life. When the roots and the stem are well started then the work of the seed shell is finished - the new plant can now grow alone.

Sally Seed is a large folder display (cut from tagboard) to help visualize the outer and inner seed parts. Add yarn rootlets and a pipe cleaner stem with paper leaves.

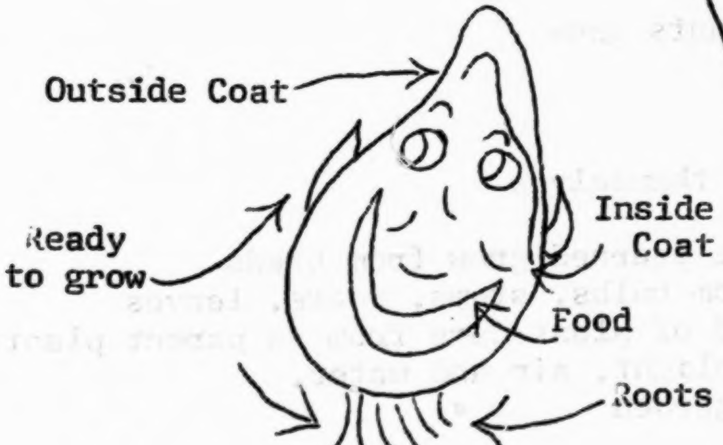


1. hard covering
2. seed coat
3. stored food
4. tiny plant

Sammy Seed is a bulletin board chart, labeled as shown. Each child might draw and cut the Sammy and Sally Seed twins.



SALLY SEED



SAMMY SEED

Suggested sequence of lessons on Seeds and Plants Unit:

Week #1 - Seeds (differences)

Lesson 1 - Motivating lesson (1st day)
2 - Field trip, collecting seeds (2nd day)
3 - Classifying seeds collected (3rd day)
4 - Planting seeds and "things" (4th day)
5 - Seeds will begin to grow (germinate) in almost any kind of soil (5th day)

Week #2 - Soils

Lesson 1 - Field trip to collect different soils
2 - Classifying soils collected on trip
3 - Hypothesizing about which soils may be best for seeds
4 - Planting seeds in different soils to test the hypotheses
5 - Plan and plant a school garden

Week #3 - Seeds and Water

Lesson 1 - Things that seeds need in order to germinate
2 - What too much water does to seeds
3 - What too little water does to seeds
4 - Do seeds float or sink in water?
5 - Observe and discuss observations of seeds collected and planted in week #1.

Week #4 - Seeds growing into plants

Lesson 1 - How deep do we plant seeds?
2 - Can seeds be planted upside down and still grow?
3 - Do any seeds grow under water?
4 - Do all plants come from seeds?
5 - Check and care for school garden

Week #5 - Some characteristics of plants

Lesson 1 - Helpful plants
2 - Harmful plants
3 - Different places plants grow
4 - Domestic plants
5 - Wild plants

Week #6 - How plants reproduce themselves

Lesson 1 - Review of ones we've learned grow from seeds
2 - Plants that grow from bulbs, stems, roots, leaves
3 - Can a different kind of plant come from a parent plant?
4 - Most plants need sunlight, air and water.
5 - Work day in school garden

Week #7 - How men use plants

Lesson 1 - For beauty
2 - For food
3 - Parts of plants used for food
4 - For shelter
5 - For protection from elements of nature

Week #8 - Transplanting, slipping and cutting

Lesson 1 - Classroom demonstration
2 - Transplanting in the school garden
3 - Setting out cuttings
4 - Preparing and planting slips
5 - Plan a meal that would use the plants grown in the school garden

* * * * *

Lesson No. 1 Unit: Gardening Sub-unit: Soil Subject: Science
Concept: There are different kinds of soil.
Grade level: Primary
Objectives:
Teacher: Have the children gather different kinds of soil.
Pupil: Take a walk outside to get different kinds of soil.
Behavioral: To develop the children's powers of observation to include seeing details of the world about them.

Materials:
1. Sand from the schoolyard sandbox
2. Topsoil from school garden
3. Humus from under school shrubs or from the nearest woods
4. Find a roadcut or excavation nearby and get:
   a. samples of topsoil from the thin dark layer on top
   b. samples of subsoil just below the top layer
5. Containers for the soil samples (glass baby food jars or clear plastic jars about the same size)

Motivation: Ask, "Will everyone who has ever gotten dirty please raise your hand?" "Let me see the hands of those who can tell me where that dirt came from." Let several contribute. Then ask, "How many think dirt is good for anything?" Let several tell why. See if they will relate dirt to the soil and plants. Then suggest that the class go collect different samples of soil.

Procedure:
1. Motivate
2. Plan what will be done.
   We will collect soil samples from several places around the school.
3. Plan how it will be done.
   a. How we will line up to leave the room.
   b. How we will be quiet so we will not disturb other classes.
   c. How we will gather samples.
   d. Where we will gather samples.
   e. etc.
4. Make sure everyone knows WHY we are making the trip.
   a. To look for different kinds of soil.
   b. To bring back different kinds of soil to the classroom.

5. Begin the trip.
6. Collect the soil samples.
7. Before returning to the room let each child perform simple soil tests.
    a. appearance description
    b. odor
    c. feel
    d. lumpiness
    e. grainy
    f. hard
    g. soft
    h. consistency
    i. dryness
    j. dampness
    k. other
8. Have all the samples put in separate containers.
9. Take the samples back to the classroom.

Evaluation: When back in the classroom, take a few minutes to discuss the experience. Ask how many different kinds of soil we found. How can differences in soil be detected (color, feel, odor, etc.)? Do you suppose all these soils will be equally good for growing seeds? Which soil do you think may be best? Why? The teacher may even keep a record of the children's predictions. If the children are able to write sufficiently well, a writing lesson may be a quick way of recording the predictions of each child as well as the reason he thinks a particular soil is best. This will lead naturally into experimenting by planting seeds in the soils.

Vocabulary: soil, sandy, rocky, clay, lumpy, subsoil

Generalizations (tentative):

There are many kinds of soils around the schoolyard.
When we get soil on us we have to wash it off to get clean.
Soils have different colors and different smells.
Not all soils feel the same.
Plants grow in soil.
When plants die and rot they become soil.
The top layer of soil is different from layers underneath.

Teacher Information for Lesson #1:

Soils are often classified according to the predominant size of the particles in them. Each kind of soil has a special feel. SAND feels gritty. SILT (dry) becomes smooth and slippery. Dry CLAY feels harsh. Wet CLAY is sticky. HUMUS cements larger particles together. Humus prevents clay particles from packing together too closely. LOAM is a mixture of clay, silt and sand in about equal quantities. GRAVEL is made up of loose, rounded fragments of rocks. Loams are good for plants.

Although we are printing sample lessons suggesting how a unit may be taught, we by no means intend that this method be slavishly followed. Rather, we set these down in order that they may stimulate and lead teachers to their own ways of presenting their own units. The suggested sequence of lessons gives a general continuity. We will present only a few lessons that could be taught at different times during the unit's development.

A lesson for Week #2, 4th day could very well be constructed as we suggest on the following page.

Unit Living Things Sub-unit Seeds and Plants
Week No. 2 Day No. 4 Grade Level Primary
Concept: We plant seeds in soil
Objectives:
Teacher: To give the children experience with planting seeds
Pupil : To plant some seeds
Behavioral: Learning to discriminate among soils for good plant growth
Materials: milk carton containers with drain hole in bottom
(at least two for each child)
soils enough for each child's containers
fast germinating seeds
(lima bean, radish, oat or other)
(about 10 for each pupil)
materials for making labels
Motivation: Ask question - "In what kind of soil do you think a seed will grow best? We are going to try each kind of soil we have collected. You may choose two different soils. In one milk carton put one kind of soil and another kind in the second carton. You will plant 5 seeds in each carton. Then we will wait to see what happens."
Procedure:

1. Motivate
2. Pass out qt. milk carton containers after having cut off about the upper 2/3 of the carton. Two cartons to each child. Punch holes in bottom of cartons for drainage.
3. Give two strips of label materials to each child. One label will be "choice #1," the other will be "choice #2." Note KIND of soil.
4. Glue the label or otherwise attach it to the carton to which it belongs.

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CHAPTER 4 - MATHEMATICS FOR THE EDUCATIONALLY DISADVANTAGED IN ELEMENTARY SCHOOLS

The current revolution in science and technology makes it imperative that elementary teachers develop improved techniques for helping educationally disadvantaged children learn the basic arithmetical skills. Unless a good foundation is laid in the early years and positive attitudes fostered, these children will not be able to develop their mathematical potential to the fullest. We cannot afford the waste. Our contemporary world demands that all of its citizens possess a degree of mathematical understanding possessed only by the mathematically elite a few short years ago. As the population continues to expand and living standards continue to increase, the demand for professional and technical workers may be expected to rise to unprecedented heights. Even in the semi-skilled fields there are few job opportunities available today to those who do not have an understanding of basic arithmetic, algebra, and geometry.

Unfortunately, telling children that they must learn mathematics now, because it will be a valuable tool when they grow up, seldom brings results. The subject must be taught in such a way that the skills become something of immediate interest and use. Much research has been done on methods of teaching mathematics to the gifted, but little information is available regarding teaching methods which have proved successful with the educationally deprived.

Although research indicates that social and economic conditions have far less effect on achievement in arithmetic than on language development,[1] there is some evidence that current instruction in mathematics provides a bias against children from low socio-economic groups.[2] Certainly it is true that arithmetic is often an unpopular subject with children from disadvantaged backgrounds. Causes of dislike and failure are usually multiple but may be found to stem, in general, from three major sources, (1) characteristics of the learner, (2) characteristics of the subject, and (3) characteristics of instructional procedure. Efforts to improve methods of teaching mathematics to educationally disadvantaged children must be considered in light of these three factors.

Characteristics of the Learner:

The research available indicates that these children evidence certain general patterns of development which make the learning of mathematics difficult. Some of the factors which may hinder progress in mathematical understanding follow:

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1. Robert L. Curry, "The Effect of Socio-economic Status on the Scholastic Achievement of Sixth Grade Children," British Journal of Educational Psychology, (February, 1962)

2. Robert A. Passy, "Socio-economic Status and Mathematics Achievement," The Arithmetic Teacher, Vol. II (Nov. 1964)

Conceptual Development. Deprived children may lack experiences through which many young children develop simple number concepts before entering school--counting by rote, recognizing numbers, understanding fractional parts, handling money and measuring things. Moreover, vocabulary may be limited--such ideas as more, less, before, after, tall, short, may not be understood. This lack may contribute serious blocks to learning. Observations by teachers indicate that with pairs of antonyms like those above, one of the words is often more easily conceptualized than the other. Kindergarten children usually understand "more", for example, but have had little experience with the word, "less."

When children come from homes where there has been a lack of experience with the manipulation of objects at a "play" stage, the school must provide such experiences. Children should have opportunities to sort and compare things--long, short, heavy, light--so that words become expressions for ideas already known. There should be things to be counted and matched--buttons, pennies, blocks--things to be put in orderly sequence--smallest to largest, tallest to shortest--things to measure and be measured by. Each child should have his own materials by which he learns the number properties of sets and how to express relations between sets. Only after many experiences with real objects and pictures are the elements of basic mathematical concepts discerned.

Motivation. These children may lack intellectual curiosity. Usually they are more interested in physical activity than they are in mental pursuits. Studies show that there is a high correlation between intellectually stimulating home environments and progress in school. Many low income families do place a high value on education and encourage their children to do well. Where there is a lack of parental interest regarding education, pupil interest is usually low.

There is no easy solution to the problem of motivation, but most children respond to lessons in which there is opportunity to participate in some active way. Reissman says, . . . "these youngsters . . .want the physical dimension in the learning."[3]

Language Development. Children from disadvantaged homes frequently have inadequate vocabularies and may find it difficult to associate words and ideas. They are often reluctant to ask questions if they do not understand.

The teacher must establish a learning climate where each child feels free to make comments and ask questions, to make mistakes and proceed in his own way. Too much emphasis on correctness of speech or precise terminology in the early stages will discourage discussion. No question or comment should be considered too trivial for attention; often what a child says provides evidence of understanding, or lack of understanding, not easily discernible in his written work.

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[3] Frank Reissman, "Speech to the Sacramento Institute on the Culturally Deprived Child," (May 18, 1963)

Self-concept, A slow start, frequent frustration and repeated failure cause a child to lack confidence in his ability to learn arithmetic. Added to this lack of confidence are the many personal problems that children from low socio-economic groups face, which contribute to a lack of success in all areas of the school curriculum.

There children need encouragement and approval, even more than most, because they have received it less frequently. Short assignments in which success is assured give them a feeling of accomplishment and encourage them to try. The development of a positive attitude towards mathematics often has an integrating effect on the whole personality.

Individual Differences. A wide range of abilities will exist among these children as it does among all children. Probably in no area are differences so apparent as in arithmetic. It is generally found that the range increases at each grade level and may be as much as six or seven years by the end of grade six.[4]

Much of the work must be individualized or undertaken with small groups if each child is to gain maximum benefit from instruction. Groups should be temporary and organized to take care of specific needs. They are most effectively used during the application and practice stage of instruction, after a skill has been carefully developed. By providing work at different levels of difficulty, but on the same general topic, class unity is retained.

Characteristics of the Subject:

Mathematics is a highly organized system based on the structural relationships of concepts concerning numbers. Learning is not so much a matter of memorization as a process of seeing these relationships and generalizing from them. Each new understanding grows out of pervious understandings. This calls for (1) the careful organization of content, (2) the establishment of precise terms and symbols, and (3) the constant evaluation of understanding.

Organization of Content. In general a spiral plan is used by which basic ideas are introduced in the early grades and extended at each grade level in a logical, coherent sequence.[5] Sporadic school attendance and frequent changes of residence may result in cumulative disabilities in mathematical understanding.

It is necessary to assess the background knowledge of pupils carefully before undertaking any new step--readiness cannot be assumed. Frequent review and reteaching are necessary.

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[4] Foster E. Grossnickle and Leo J. Brueckner, Discovering Meanings in Elementary Mathematics, (New York: Holt, Rinehart & Winston, 1963)

[5] Frances Flournoy, Elementary School Mathematics (Washington: The Center for Applied Research, Inc., 1964)

An example of the scope and sequence of teaching a specific topic--addition--follows:

Grade 1
- Readiness: union of sets
- Basic facts: sums through 9 (column and equation)
- Commutativity: related facts
- Zero as an addend

Grade 2
- Basic facts: sums through 18
- Associative property - introduction of parentheses
- Addition of two and three-place numbers, no regrouping

Grade 3
- Basic facts: mastered and maintained
- Bridging and regrouping
- Number line to illustrate properties
- Checking

Grade 4
- Properties - understanding formalized
- Three and four place addends with regrouping twice
- Addition of like fractions

Grade 5
- Addition of decimal fractions
- Addition of unlike fractions
- Operations with negative numbers

Grade 6
- Addition of mixed fractions and decimals
- Addition in other bases

Language and Symbols of Mathematics. Modern programs stress precision of language yet ambiguities often arise; simple known words are often used in completely new ways in mathematics, "set" and "root", for example; a symbol may represent one word or several, as = for "equal", and $\in$ for "is an element of"; more than one symbol may convey the same idea as x and , or Ø and . . .

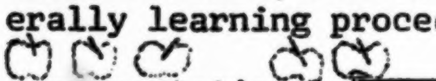
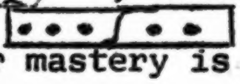
Teachers working with language handicapped children must give a great deal of attention to semantics. The specialized vocabulary of mathematics can be confusing--witness the child who interprets a "reasonable" answer as a "cheap" answer! Not only must teachers give extreme care to developing children's vocabularies, but they must guard against vagueness and lack of consistency in their own language. The symbols used by the teacher should be the same as those used in the children's text and written materials.

Evaluation of Understanding. Mathematical understanding is not easily assessed. Some children may acquire the ability to manipulate numbers without developing meaning, others may have insights which they cannot verbalize. Standardized tests, which measure computational skill are not satisfactory for measuring understanding.

There are, however, various techniques which can be used to measure the less tangible results of arithmetic teaching. These might include the following:

1) Teacher observation
2) Individual conferences
3) Analysis of reports and projects
4) Children's explanations of their work
5) Interest inventories
6) Self-rating checklists

Characteristics of Instructional Procedure:

Modern instructional techniques stress activities through which the child learns by means of exploration and self-discovery. The effective teacher guides the learning activities so that the child gains insight into the structure and relationships on which mathematics is built, and is able to generalize from his experiences. Generally learning proceeds from the manipulation of concrete objects, , to working with semi-concrete or pictorial representations, , to the use of abstract symbols, 3=2= 5.[6] Practice for mastery is not undertaken until understanding has been established.

While no one would question the soundness of such teaching procedures, educationally deprived children often require some variation in method and content. The teacher must bear in mind the psychological and sociological background of these children in planning for, (1) the presentation of new material, (2) the provision of practice exercises, and (3) the evaluation of learning.

Presenting New Learning. In presenting a new step or a new topic in arithmetic, a carefully guided pre-text book activity which involves the solving of a real problem--using concrete or semi-concrete materials--is recommended. New learnings may be presented to the class as a whole and small groups formed during the practice stage or when some children require reteaching.

A developmental lesson on reciprocals, as an introduction to division of fractions at grade six, might be presented in the following manner. The teacher says,

> "On your desks you will find several strips of paper. (These should be approximately 2 by 12 inches and easily folded.) Take one of the strips and fold it into fourths. Now, using your strips of paper, see if you can tell me the answer to this problem. 'How many three-fourths are there in one whole unit?'" (She writes 1 + 3/4 on the chalkboard.) After some discussion and argument it will be found that there are 1 1/3 three-fourths in one unit. For those children who have trouble

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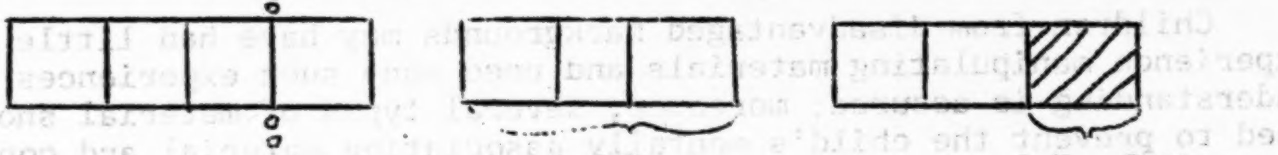
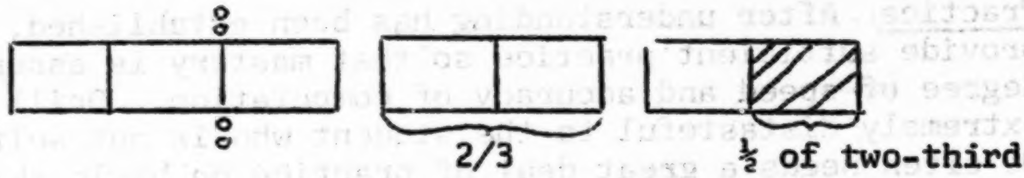
6. Grossnickle and Brueckner, op. cit., p. 31

visualizing the answer, it may be helpful to cut the unit into one three-fourth and place the remaining section over it, thus:

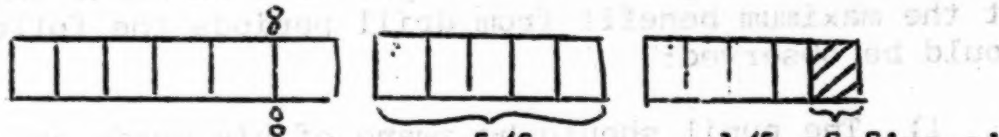


Using the remaining strips, the answer to several similar problems is found.

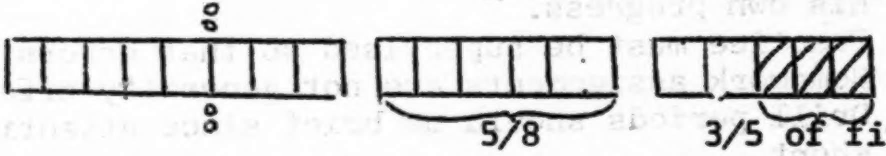
1 + 2/3 = 1½



1 + 5/6=1 1/5



1 + 5/8=1 3/5



The teacher keeps a record of the problems solved, and the answers, on the chalkboard. Then she asks the children to help her express the answers in another way--as improper fractions.

1+ 3/4 = 4/3
1 + 2/3 = 3/2

1 + 5/6 = 6/5
1 + 5/8 = 8/5

Next she asks each child to look at the examples carefully and raise his hand when he sees a pattern. The relationship will be crudely expressed at first because the children lack the language for precise mathematical expression--"The answer is the fraction upside-down," perhaps.

When this "phenomenon" has been observed by all children the teacher suggests checking the answers to be sure they are correct. "How can we check a division example? Yes, by multiplying the factors (divisor and quotient). Does 3/4 x 4/3 equal 1? Yes, because 12/12 is another name for one. Do all of the examples check? Yes, 6/6 = 1, 30/30 = 1, 40/40 = 1."

The teacher then explains that mathematicians have a special name for pairs of fractions like 2/3 and 3/2. "They are called 'reciprocals', the reciprocal of 2/3 and 3/2. What is the reciprocal of 5/8, 8/5, 4/3?" When it is clear that most of the pupils understand the terminology, teacher and pupils form generalizations from their experience:

One divided by a fraction is the reciprocal of that fraction.

A fraction multiplied by its reciprocal is equal to one.

Children from disadvantaged backgrounds may have had little experience manipulating materials and need many such experiences before understanding is assured; moreover, several types of material should be used to prevent the child's mentally associating material and concept. Attempts to introduce numerical computation before concepts are understood lead, at best, to rote memorization and, at worst, to dislike and failure.

- Practice. After understanding has been established, it is necessary to provide sufficient practice so that mastery is assured, as well as some degree of speed and accuracy of computation. Drill exercises may be extremely distasteful to the student who is not self-motivated, and yet he often needs a great deal of practice on basic skills. In order to get the maximum benefit from drill periods the following guidelines should be observed:

1) The pupil should be aware of his needs and keep a record of his own progress.
2) Practice must be supervised so that errors are not practiced. Homework assignments are not generally effective.
3) Drill periods should be brief since attention span is usually short.
4) Practice should be individualized. No child should waste time practicing what he has already mastered.
5) Every effort should be made to make practice activities interesting and varied. Novelty often provides needed motivation. For example, a small group of first graders working on mastery of the easy basic addition and subtraction facts might enjoy the game aspect of an exercise like this:

> The teacher shows the children a number of colored disks (not more than ten). Putting her hands behind her, she places part of the counters in each hand; then holding her hands out, she opens one and lets the children "guess" how many are in the closed hand.

Evaluation. Evaluation is an essential component of the teaching process and implies the continuous appraisal of the effectiveness of instructional procedures. It is necessary to know not only how well plans are working out in the over-all arithmetic program, but also the effectiveness of those plans in terms of individual pupil growth--what has been understood, what needs reteaching or, perhaps, requires a different approach, and what attitudes are being developed.

In evaluation, as in teaching, the first step is a clear statement of desired outcomes in terms of expected pupil behavior. Generally these are related to the following major objectives:

1) The pupil shows evidence of growth in knowledge and understanding of basic mathematical concepts.

2) The pupil evidences increasing skill in performing computations and is accurate and neat
3) The pupil shows evidence of growth in mastering the language and symbolism of mathematics.
4) The pupil has desirable attitudes and appreciation for the role of mathematics in the modern world.

Once objectives have been formulated and understood, it is necessary to collect pertinent data concerning pupil progress in reaching these goals. Varying objectives such as those listed above call for varying procedures in arriving at judgments. It is fairly easy to evaluate computational skill and speed and accuracy by means of objective tests of various kinds--test-book, teacher-made, or commerical. Standardized instruments for measuring understanding of concepts are being developed presently and should prove extremely helpful.[7]

In preparing test items to check understanding it is well to avoid paper-and-pencil computation and keep reading at a minimum. Test items like the following can be read aloud by the teacher, allowing only enough time for the children to read the four possible answers, and, without doing the computation, choose an answer:

Which of these means the same as $\begin{array}{r}34\\ \times 23\\ \hline\end{array}$?

A. (3 x 4) + (2 x 34)
B. (3 x 34) + (2 x 34)
C. (3 x 34) + (20 x 34)
D. None of these

Interest, enthusiasm and enjoyment can be observed, as can language skill and proper use of symbols. A great deal of valuable information can be obtained from careful teacher observation, if checklists are prepared and anecdotal records kept.

Basic Understandings in Arithmetic:

If we are to teach for meaning in arithmetic, it is essential that pupils understand the principles and relationships underlying the number system and operations with numbers. In order to provide pupils with a foundation for developing comprehension in the field of arithmetic, and a sound background for the further study of mathematics, it is necessary to develop understanding of basic ideas in the following areas:

1) Number and the numeration system
2) Addition of whole numbers
3) Multiplication of whole numbers
4) The inverse operations of subtraction and division
5) Fractional numbers
6) Decimals
7) Measurement

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[7] California Test Bureau, Contemporary Mathematics Test, (Monterey: California Test Bureau, 1965).
Stanford Achievement Test Series, Modern Mathematics Concepts Test, (New York: Harcourt, Brace & World, Inc., 1965.)

Numbers and the Numeration System:

Number and Numeral. There is a clear distinction between a number and a numeral. A number is an abstract concept; a numeral is a symbol used to represent a number. Of first concern at the primary level is the meaning of number itself. The use of sets is one way of providing a logical and mathematically sound foundation for developing basic concepts of numbers.

At the first level, or concrete stage, a child's experiences with sets should be with objects; sets of dishes, sets of crayons, sets of toys. From this stage he progresses to viewing a collection of unrelated objects as belonging to a set; the set of miscellaneous objects in a box, for example.

At the second level, which may be called the semi-concrete state, the child learns to recognize pictorial representations of real objects as belonging to sets; rabbits on the flannel board, triangles on the chart, dots on the chalkboard. Again, it should be made clear that objects need not be related or alike in any way in order to belong to a set. Any specific set must, however, be well-defined, so that its membership is clear. This may be done by naming the elements; as the ball of string, the broken jackknife and the desiccated toad in the set of objects in Johnny's pocket. If the set is very large it may be identified by giving a clear description of it; as the set of whole numbers.

At the third level the child learns to associate the idea of numbers with the elements of a set. Are there as many chairs at the table as there are pupils in the reading group? Are there more dolls than cars? Finally, how many birds in the set of birds pictured on the flannel board?[8]

When a child progresses from the stage of one-to-one matching of real objects, or pictured objects, to the level of matching objects in one-to-one correspondence with the number names in order, he is ready for the purely abstract stage--the consideration of just the cardinal number of sets. The child has abstracted the concept of number --the idea of "fiveness"--when he recognizes that a common characteristic marks this set of tally marks, |||||, this pictured set of circles, •••••, and the set of fingers on his right hand. He now recognizes that equality in number is independent of the physical characteristics of the objects involved and can now compare sets by comparing their cardinal number. The understanding that a set of 5 objects can be grouped in various ways, as △△△△△, or △△△ △△, or △ △△△△, must also be established. The importance of developing these understandings before attempting the teaching of basic addition and subtraction facts cannot be over-emphasized. Piaget asserts that, while it is possible to teach pupils to repeat basic facts from memory, true understanding is not possible until the child sees six, for example, as a totality containing--as parts--two and four, or three and three, or one and four.[9]

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[8] Note that, again, first experiences are with concrete materials, later with semi-concrete materials.

Other understandings and skills which must be developed at the primary level include the ability to count rationally to 100, the ability to read and write the number symbols, and an understanding of the system of decimal notation used in writing two-place numerals. Various manipulative materials may be utilized to develop the concept of grouping by tens. At the concrete stage sticks can be bundled, papers can be stacked, "pop" beads can be assembled. At the semi concrete stage devices such as a simple abacus and place value chart may be used. The concept of zero may be developed first as the cardinal number used to designate the empty set; later as a starting point, as on the thermometer or number line; and finally as a place holder indicating no frequency in a place.

As children progress in school, concepts regarding the number system increase in complexity. Ideas which must be developed are summarized below.

Base and Place Value. By using a base of ten and a place value system, it is possible to write any number using the ten digits, 1, 2, 3, 4, 5, 6, 7, 8, 9, and 0. The digit to the extreme right in a numeral represents the number of ones, the next digit to its left indicates the number of tens, the next indicates the number of hundreds, the fourth thousands, and so on. One hundred should be understood as 10 x 10, one thousand as 10 x 10 x 10, one ten thousand as 10 x 10 x 10 x 10, one hundred thousand as 10 x 10 x 10 x 10 x 10, and so on for other powers of ten. Exponential notation is a short way to represent each power of ten for each place in the numeration system; one is represented by 10^0, ten by 10^1, one hundred by 10^2, one thousand by 10^3, ten thousand by 10^4, one hundred thousand by 10^5, and so on for other multiples of ten.

Numerals which have more than four digits are set off by commas in groups of three starting from the units digit. Each group of three digits is called a "period". The periods are units, thousands, millions, billions; and the grouping within each period is by ones, tens, and hundreds as shown below:

Billions			Millions			Thousands			Units		
1	6	2	3	6	4	9	4	6	7	8	1
hundred billions	ten billions	billions	hundred millions	ten millions	millions	hundred thousands	ten thousands	thousands	hundreds	tens	units

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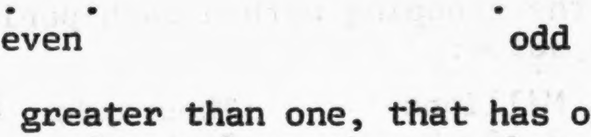
[9] Jean Piaget, The Child's Conception of Number (London: Routledge and Kegan Paul, Ltd., 1952) p. 190.

Beginning with the ones position in a numeral the value of each place to the left is 10 times greater than the value of the previous place. For example, in the numeral ⑥ 6 6, the circled 6 has a value ten times as great as the underlined 6 and one hundred times as great as the 6 in the ones place. Beginning at the left and going to the right in a numeral, the value of each place is 1/10 as great as the value of the previous place; thus the value of the underlined 6 above is one tenth as great as the circled 6.

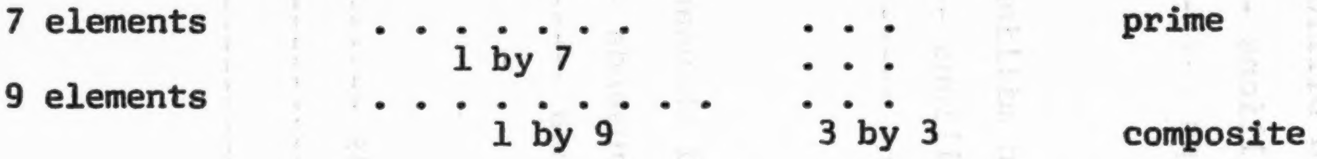
Additive Principle. In our system of notation the value of any numeral is the same as the total place value of the digits used. To illustrate, 343 means 300 + 40 + 3. We may rename a number in various ways according to the way the grouping is interpreted; 343 may be thought of as 343 ones, 34 tens and 3 ones, 3 hundreds and 43 ones, or 3 hundreds, 4 tens, and 3 ones.

Cardinal and Ordinal Numbers. In counting, numbers may be used in two ways. When objects are put in one-to-one correspondence with the numbers taken in order to tell "how many", the last number name used is called the cardinal number of the group counted. When a number is used to identify an object, to tell "which one", it is called an ordinal number. For example, in this set . . . . ., we may say there are five dots, or we may say that the last dot is the fifth dot. Zero may be used in the cardinal sense to indicate the empty set, or "not any."

Even, Odd, Prime and Composite Numbers. Numbers may be classified not only according to use but according to form. All numbers divisible by 2 are called even numbers and the numerals representing them end in 2, 4, 6, 8, or 0. Odd numbers are not divisible by 2 and the numerals end in 1, 3, 5, 7, or 9. Using the counting numbers, this may be illustrated very simply for young children by the use of sets. If all of the objects in a set can be placed in an array, or rectangular pattern, having two objects in each row, the cardinal number of the set is even. If all the elements cannot be placed in two equal columns, the cardinal number of the set is odd.



A counting number greater than one, that has only itself and 1 as factors, is called a prime number; those numbers having more than two factors are called composite numbers. This concept can also be illustrated by arranging the elements of sets in array.



The only possible array for 7 is a 1 by 7 array, which means that the only factors of 7 are 1 and 7. If more than one array is possible, this means there are more than two factors; in the case of 9, the factors are 1, 9, and 3. By the above definition the number 1 is neither a prime nor a composite number.

Addition of Whole Numbers:

The Addition Operation. Addition of whole numbers is an operation on two known numbers (addends) to produce a third number (sum) equal to the combined value of the known numbers. Sets of things are combined or joined; numbers are added.

Properties of Addition - Closure. We say that the set of whole numbers is closed under the operation of addition. This means that it is always possible to add any two whole numbers because there is always a whole number within the same set of numbers to use as a sum.

Commutative Property. When two numbers are added, the result is unaffected by the order of the addends. The sum of 7 + 2 is the same as the sum of 2 + 7.

Associative Property. The addition of more than two numbers must be done two at a time because addition is a binary operation. However, the numbers may be grouped or associated in any way; for example, the sum of 2 + (7+3) is the same as the sum of (2+7) + 3. The associative property, together with the commutative property, makes the addition algorism possible. For example, 25 + 34 = (20+5) + (30+4), which is associated as (20+20) + (5+4). This association of tens and of ones may be noted in the conventional algorism $\begin{array}{r} +25 \\ 34 \\ \hline 59 \end{array}$.

In adding addends of more than one digit, it is often necessary to rename the sum and then regroup the addends. This is an application of the associative property. $\begin{array}{r} +29 \\ 19 \\ \hline \end{array} = \begin{array}{r} 20 + 3 \\ 10 + 9 \\ \hline 30 + 12 \end{array} = 30 + (10+2) = (30+10) + 2 = 42$. In the conventional algorism the ones are added first. Then the 12 ones are regrouped as 1 ten and 2 ones. The one that is "carried" represents 10 ones regrouped as 1 ten, and is included in the sum of tens; thus, 3 tens + (1 ten + 2 ones) = (3 tens + 1 ten) + 2 ones = 4 tens + 2 ones = 42.

Identity Element. Zero is the additive identity element; that is, when zero is added to a given number no change occurs--the sum is the number itself (6+0 = 6).

Multiplication of Whole Numbers:

The Multiplication Operation. Multiplication is an operation on two numbers (factors) which results in a third number (product). Multiplication may be thought of as a special kind of addition, in which one factor represents a number of sets of equal size and the other factor represents the number in each set. An orderly arrangement called an array may be used to illustrate: 4 x 3 is the union of 4 disjoint sets, each of which has 3 elements, as in Figure 1. In this example,

. . .   the 3 (sometimes called the multiplicand) represents the
. . .   size of each set. The 4 (sometimes called the multiplier)
. . .   represents the number of sets.
. . .

Figure 1

Properties of Multiplication - Closure. The product of every pair of whole numbers is a whole number; therefore the closure property holds for multiplication of whole numbers.

Commutative Property. The order of the factors may be reversed without affecting the result (3 x 4 = 4 x 3). This property enables us to simplify computation; for example, it may be easier to multiply 3 x 28 than 38 x 3. The commutative property is also used in checkings; the result of 32 x 24 may be verified by checking with the result of 24 x 32.

Associative Property. Multiplication is a binary operation. To find the product of three numbers the factors may be associated in any way without affecting the product, (3 x 4 x 2 = 3 x (4x2). This property simplifies computation; for example 20 x 30 may be thought of as 2 x 300, because 20 x 30 = (2x10) x 30 = 2 x (10 x 30). The associative property may also be used in checking; 32 x 24 = (4x8) x 24 = 4 x (8x24).

Distributive Property of Multiplication over Addition. The distributive property of multiplication involves the relationship between multiplication and addition. If two addends are to be multiplied by the same number, as 3 x (4+5), the sum of the addends may be multiplied by the number, and the products added; 3 x (4+5) = (3x4) + (3x5), and (4+5) x 3 = (4 x 3) + (5x3). In the first example, distribution is to the right; in the second, distribution is to the left. The distributive property is of great value in developing multiplication facts from easier known facts, as 5 x 9 = 4 x (4+5). (5x4) + (5 x5) = 20 + 25 = 45, so 5 x 9 = 45. To multiply 35 x 24, 24 may be multiplied first by 5 and then by 30 and the results added, as

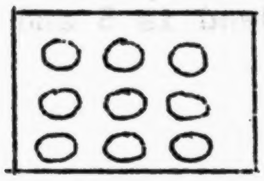
$$= \begin{array}{r} 24 \\ \underline{5} \\ 120 \end{array} \quad \begin{array}{r} 24 \\ \underline{30} \\ 720 \end{array} = \begin{array}{r} 720 \\ \underline{120} \\ 840. \end{array} \qquad \begin{array}{r} 24 \\ \underline{x35} \\ 120 \\ \underline{72} \\ 840 \end{array}$$

The zero is frequently omitted in the second partial product (720) when using the conventional algorism. This is more effectively explained to children if the distributive property is used in develping understanding.

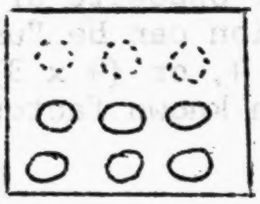
Identity Element. The identity element for multiplication is 1. A given number may be multiplied by 1 without changing its value (1x 5 = 5); the product is the same as the given number.

Zero in Multiplication. If a given number is multiplied by zero, the product is zero. This is difficult to represent concretely, but 3 x 0 can be interpreted as 0 + 0 + 0; therefore, by applying the commutative property, 0 x 3 = 0.

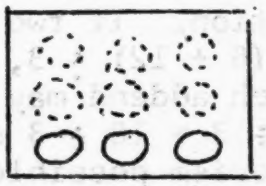
A teacher might develop the idea that 0 x 3 = 0 thus:



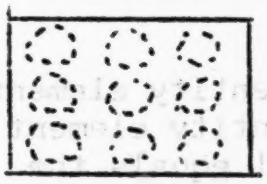
Teacher: Look at this array. What product expression is illustrated?
Answer: 3 x 3 = 9



Teacher: (erasing first row) Now what product expression is illustrated?
Answer: 2 x 3 = 6



Teacher: (erasing second row) What product expression is shown now?
Answer: 1 x 3 = 3



Teacher: (erasing last row) What product expression is shown now?
Answer: 0 x 3 = 0

Inverse Operations:

Subtraction

Operation of Subtraction. The operation of subtraction is the inverse or opposite of addition; that is, one operation can "undo" the other. If 6 is added to 7, the addition may be undone by subtracting 6 from 13. Subtraction may be thought of as finding an unknown addend when the sum and the other addend are known.

Identity Element. Since zero is the identity element for addition (4 + 0 = 4), zero subtracted from a given number results in no change (7 - 0 = 7); the remainder is the same as the given number. Thus, zero is the identity element for subtraction.

Regrouping (borrowing) in Subtraction. In subtraction it is sometimes impossible to subtract without renaming the sum and then regrouping. For example, in 32 - 17, the 32 may be renamed as 30 + 2 or (20 + 10) + 2. Then (20 + 10)+ 2 = 20 + (10 + 2) = 20 + 12. This is an application of the associative law of addition. The application may be noted in the regrouping procedure used in the subtraction algorism, as $\begin{array}{r} {}^{2}\cancel{3}\,{}^{1}2 \\ -\ 1\ \ 7 \\ \hline \end{array}$

Types of Subtraction Problems. Understanding in subtraction is somewhat complicated by the fact that three types of situation exist which call for the subtraction process. Problems which ask, "How many are left," involve finding a remainder when something is taken away. Problems which ask, "How many less" or "How many more," involve comparison or finding the difference. The question, "How many more are needed," asks how many must be added--it is clearly an unknown addend which must be found. To give an example: "I have 7 eggs; how many more are needed to make 12?" means $7 + \square = 12$. The missing addend is 5 and it may be found by subtraction.

Division

Operation of Division. Division is the inverse or opposite of multiplication. If 3 is multiplied by 4, the multiplication can be "undone" by dividing the product by 3. [$4 \times 3 = 12$, so $12 \div 3 = 4$, or $(4 \times 3) \div 3 = 4$]. When we divide we start with the product and a known factor and find the unknown factor.

Distributive Property. The distributive property of division is a consequence of the distributive property of multiplication. If two or more addends are to be divided by the same number, as $(6 + 12) \div 3$, the sum of the addends may be divided by the number, or each addend may be divided by the number and the results added [$(6 + 12) \div 3 = 18 \div 3$ or $(6 \div 3) + (12 \div 3)$]. This makes the long division algorism possible [$3\overline{)96} = 3\overline{)90} + 6$ or $3\overline{)90} + 3\overline{)6}$].

Identity Element for Division. Since 1 is the identity element for multiplication, ($1 \times 5 = 5$ and $5 \times 1 = 5$), the identity element for division is 1 ($8 \div 1 = 8$). Any number divided by 1 equals the number. As a result of the commutative property of multiplication, it follows that a number divided by itself equals 1 ($8 \div 1 = 8$ and $8 \div 8 = 1$).

Zero in Division. When zero is divided by any other number, the result is 0. Because $0 \times n = 0$, then $0 \div n = 0$. ($0 \times 6 = 0$, so $0 \div 6 = 0$). Since no number except 0 satisfies the conditions of $n \times 0 = n$, then $n \div 0$ is not possible ($6 \times 0 \neq 6$, so $6 \div 0 \neq 6$; $6 \div 0 \neq 0$, because $0 \times 0 \neq 6$). Also, any number times zero equals zero ($4 \times 0 = 0$; $6 \times 0 = 0$), so any number could satisfy the conditions of $0 \div 0 = n$. Division by zero is not defined and is therefore excluded.

Types of Division Problems. Since division is the inverse of multiplication, it may also be interpreted as a special case of serial subtraction, just as multiplication is a special case of serial addition. In dividing 12 by 3, the question might be, "How many sets of 3 are there in 12?" The answer could be obtained by subtracting 3 from 12 (in this case 4 times) until zero remained. On the other hand some division problems ask the question, "If 12 is divided into 3 equal sets, how many elements are in each set?" In this case division may be thought of as finding a fractional part of a number. The first type is called measurement division and the second is called partitive division. In either case the process to be used is division and the answer is 4.

Fractional Numbers:

Definition. A fractional number is a new number created to augment the system of whole numbers. Since there is no whole number that satisfies the definition of such an example as 1 divided by 2, it is necessary to expand the number system. In mathematics, fractions belong to the set of numbers called rational numbers. A rational number is the ratio of two whole numbers: 1/2, 3/4, or 6/1.

The number named by the numeral below the line is the denominator and tells the number of equal parts into which the whole has been divided. The number named by the numeral above the line is the numerator and tells how many of these parts are being considered; thus, 3/4 shows that something has been divided into 4 parts and that we are dealing with 3 of these parts. The numerator and denominator are called the terms of a fraction.

Equivalent Fractional Numbers. Equivalent fractional numbers are fractional numbers which have the same value, or name the same number, as 1/3 and 2/6. Equivalent fractional numbers may be obtained by multiplying both terms of a fraction by the same counting number (0 is excluded) (1/2 x 3/3 = 3/6). This is equivalent to multiplying by one (3/3 = 1) and, although it changes the form of the fraction, it does change the value. Dividing both terms of a fraction by a common factor will also produce an equivalent fractional number (4/8 ÷ 4/4 = 1/2). This is equivalent to dividing by one (4/4 = 1) and results in no change in the value of a fraction. To change a fractional number to its simplest form it is necessary to divide both terms by their greatest common factor. If we express both numerator and denominator of the fraction 12/18, as products of prime factors, 12/18 = 2 x 2 x 3/2 x 3 x 3, it may be seen that the greatest common factor is 2 x 3. We therefore divide both 12 and 18 by 6 to obtain the simplest name for our fractional number; 12/18 ÷ 6/6 = 2/3.

Addition and Subtraction

Properties. The set of fractional numbers is closed under addition, as it is with whole numbers. The commutative and associative properties apply in the same manner. Zero is the identity element for addition and subtraction.

Changing the form of a fractional number. It is sometimes necessary in computing to change the form of a fractional numeral. In adding 1/4 and 1/3, for example, the fractions are changed to equivalent fractional numerals having a common denominator, 3/12 and 4/12. In subtracting 1/2 - 1/3, both fractions would be changed to sixths. Any common multiple of the two denominators could be used, but is is convenient to use the least common multiple. To find the lowest common denominator for the fraction 7/12 and 5/18, we would express both denominators as products of prime factors, 12 = 2 x 2 x 3. It may be
18 = 2 x 3 x 3

seen that the least common multiple of 18 and 12 is 36 ($2 \times 2 \times 3 \times 3$). We would, therefore, change both fractions to equivalent fractions having the common denominator 36:

$$\begin{array}{r} 7/12 = 21/36\ . \\ +5/18 = 10/36 \end{array}$$

It is also necessary sometimes to express a given fraction in its simplest form. A fraction is in its simplest form when the denominator and numerator are prime to each other; that is, when they have no common divisor except 1. The fractional number 10/24 is the sum of $1/6 + 2/8$; the simplest form for this fractional number is 5/12, which is obtained by dividing both terms of 10/24 by 2, the greatest common factor.

The Algorisms. The associative and commutative properties of addition make the algorisms for addition possible. To illustrate:

$$\begin{array}{l} 3\ 1/3 \\ \underline{5\ 2/3} \\ 8\ 3/3 = 9 \end{array}$$

, because $(3 + 1/3) + (5 + 2/3) = (3 + 5) + (1/3 + 2/3) = 8 + 1 = 9$. Regrouping, sometimes necessary in subtraction, is also an application of the associative principle. To illustrate:

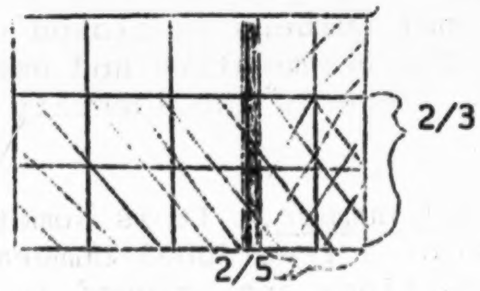
$$\begin{array}{rcr} 6\ 1/4 & = & 5\ 5/4 \\ \underline{-2\ 3/4} & & \underline{-2\ 3/4} \end{array}$$

, because $(6 + 1/4) + (5 + 4/4) + 1/4 = 5 + (4/4 + 1/4) = 5 + 5/4 = 5\ 5/4$.

Multiplication of Fractional Numbers

Properties. The set of fractional numbers is closed under multiplication; the commutative, associative, and distributive properties apply; and the identity element is one. One additional property now exists; the multiplicative inverse property or reciprocal property. For every rational number, except 0, another rational number exists such that the product of the two numbers is 1. 2/3 is the reciprocal of 3/2, 1/2 is the reciprocal of 2, 3/2 is the reciprocal of 2/3, and 2 is the reciprocal of 1/2.

The Algorism. When fractional numbers are multiplied, the numerator of the product is obtained by multiplying the numerators (number of parts) of the two fractions, and the denominators (size of the parts) of the two fractions. This may be illustrated by the following diagram:



First 2/5 is marked on a rectangular unit, then 2/3 is indicated on the unit. The unit is thus divided into 15 equal parts and it can be seen that 2/3 of 2/5 equals 4 of these small parts and that the parts are fifteenths.

Division of Fractional Numbers

Properties. In the set of fractional numbers division is the inverse of multiplication as it is in the set of whole numbers. Division is closed, however (except for division by zero); that is, division is always possible within the set of fractional numbers.

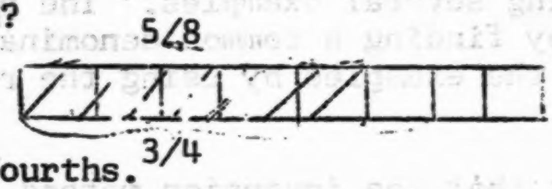
The Algorism. In the common algorism for dividing by a fraction, we simplify the process by multiplying the dividend by the reciprocal of the divisor. For example, in 6 ÷ 3/4, we multiply 3/4 by 4/3 to obtain a divisor of 1. The dividend must also be multiplied by 4/3, so as not to change the value of the quotient, so, $\frac{6}{3/4} = \frac{6 \times 4/3}{3/4 \times 4/3} = \frac{6 \times 4/3}{1} = 6 \times 4/3 = 24/3 = 8$. Therefore, we say that dividing by a fraction is the same as multiplying by the reciprocal of that fraction (6 ÷ 3/4 = 6 x 4/3).

Children ought to have an opportunity to investigate various methods of dividing fractional numbers before settling on the traditional method as the most efficient. After an initial experience developing the understanding of reciprocals (see p. 95-7) and the inversion method, the teacher might continue thus:

Teacher: Last week we developed a method for dividing fractional numbers by using the reciprocal and multiplying. John, can you show us how to solve this example, 5/8 ÷ 3/4?

Answer: One divided by 3/4 is 4/3, so 5/8 divided by 3/4 is 5/8 x 4/3. That's 20/24, or 5/6.

Teacher: Can you prove your answer is correct by drawing a diagram?

Answer: 

The shaded area is 5/6 of three-fourths.

Teacher: Let's investigate a little further today and see if we can discover another way we could divide fractions. Look at this example, 5/6 ÷ 1/2. Does anyone have a suggestion?

Answer: Maybe we could just divide--that's what we do when we multiply fractions. Divide 6 by 2 and 5 by 1. That's 5 divided by 3, or 1 2/3.

Teacher: Is that correct? Can you check your answer by the inversion method?

Answer: Yes. 5/6 ÷ 1/2 is 5/6 x 2/1. That's 10/6 or 1 2/3.

Teacher: It seems to work, doesn't it? Would your method work on this example too, 5/6 ÷ 2/3?

Answer: Let's see, 5 ÷ 2 over 6 ÷ 3 is 2 1/2 over 2--2 1/2 divided by 2 is 1 1/4. I'll check it by the other method, 5/6 x 3/2 is 15/12, or 1 1/4. Yes, it works.

Teacher: Try this one, 3/4 ÷ 2/3.

Answer: 3 ÷ 2 over 4 ÷ 3, that's 1 1/2 over 1 1/3; 1 1/2 ÷ 1 1/3--I'll have to change to improper fractions--that's 3/2 ÷ 4/3, that's 3 ÷ 4 over 2 ÷ 3, that's 3/4 ÷ 2/3--we are right back where we started from!

Teacher: Try it by the inversion method.

Answer: 3/4 ÷ 2/3 is 3/4 x 3/2, that's 9 divided by 8, or 1 1/8.

Teacher: Which method is easier to use?

Answer: The inversion method. Sometimes if you just divide, it gets too complicated.

Teacher: Can you think of something we might do to make the division method less complicated?

Answer: Maybe we could change the fractions to a common denominator, like in addition.

Teacher: Let's try the same one and see if that helps, 3/4 ÷ 2/3.

Answer: The common denominator is 12--that would be 9/12 ÷ 8/12, or 9 ÷ 8 over 1. That's 9/8, or 1 1/8. That's easy!

After doing several problems together the teacher gives the pupils a work sheet containing several examples. The pupils are asked to work the problems by finding a common denominator and dividing, and then to check the examples by using the reciprocal and multiplying.

It soon becomes apparent that the inversion method is most efficient and the pupils decide to use that method. They have learned something important, however--that there is more than one way to solve a problem--and they have had an opportunity to investigate and draw conclusions for themselves.

Decimals:

Definition. A decimal names a fractional number with its denominator expressed as a power of ten; decimals are, therefore, merely a special kind of numeral for a fractional number. The symbol 3/10 is the fractional form, and the symbol .3 is the decimal form, for the same number.

Extending the Numeration System. Decimal notation is simply an extension of the idea of place value. The decimal point is used to indicate the ones position and each place to the right of the ones place represents a value which is 1/10 as large as the value represented by the place to the left (.3 = 3/10; .03 = 3/100; .003 = 3/1000). A digit in the tenths place has a place value of 1/10 x 1; a digit in the hundredths place has a value of 1/10 x 1/10 or 1/100; a digit in the thousandths place has a place value of 1/10 x 1/10 x 1/10, or 1/1000;

a digit in the ten-thousandths place has a place value of 1/10 x 1/10 x 1/10 x 1/10, or 1/10,000; and so on. These place values are indicated in exponential notation by $1/10^1$, $1/10^2$, $1/10^3$, $1/10^4$, or by 10^{-1}, 10^{-2}, 10^{-3}, 10^{-4}.

Reading Decimal Numerals. The equivalence between common fractions having denominators of powers of ten (such as 1/10, 16/1000) and decimal numerals (such as .1 and .016) serves as a guide to reading decimal numerals less than one. The numeral .1 is read "one tenth"; .016 is read "sixteen thousandths." In reading mixed decimal expressions the whole number is read, and then the decimal fraction, preceded by the word "and", is read. The numeral 132.7 is read, "one hundred thirty-two and seven tenths."

Addition and Subtraction with Decimals. Only decimal terms having the same positional value can be added or subtracted; tenths are combined with tenths so that the sum is expressed in tenths, hundredths are combined with hundredths so that the sum is expressed in hundredths. Keeping the decimal point aligned helps in the process of placing the decimal point correctly in the answer. Suffixing a zero to a decimal does not change its value (.3 = .30=.300). Regrouping (carrying) in addition is performed as with whole numbers; for example, 10 tenths may be regrouped as 1 one, 10 hundredths as 1 tenth. In regrouping (borrowing) in subtraction, 1 one may be regrouped as 10 tenths, 1 tenth as 10 hundredths.

Multiplication of Decimals. Multiplication of decimals is performed just as with whole numbers, except for the placing of the decimal point in the answer. The product of ones and tenths is tenths (1 x .1 = 1 x 1/10 = 1/10 or .1); the product of tenths and tenths is hundredths (.1 x .1 = 1/10 x 1/10 = 1/100 or .01); the product of hundredths and tenths is thousandths (.01 x .1 = 1/100 x 1/10 = 1/1000 or .001). In multiplying 63.8 by .24 there will be three decimal places in the product because 638/10 x 24/100 = 638 x 24/1000, and thousandths are expressed by three decimal places.

Division of Decimals. When a decimal is divided by a whole number there will always be a decimal in the quotient; for example, when tenths are divided by a whole number the answer will be tenths (.8 ÷ 4 = 8/10 ÷ 4/1 = 2/10 or .2). When hundredths are divided by a whole number, the answer will be hundredths, and so on. When dividing by a whole number, the answer will be hundredths, and so on. When dividing by a decimal, the placement of the decimal point may be understood as: tenths divided by tenths results in a whole number; for example, .8 ÷ .2 = 8/10 ÷ 2/10 = 4/1 = 4. Hundredths divided by tenths results in tenths; for example, .32 ÷ .4 = 32/100 ÷ 4/10 = 8/10 or .8. This understanding is basic in the use of the subtractive rule for placing the decimal point in the quotient, as $.4\overline{).32\,|}\,\underline{0.8}$. Subtracting one decimal place in the divisor from two decimal places in the dividend indicates one decimal place in the quotient. This is a short cut method of dividing hundredths by tenths.

A decimal divisor can always be made a whole number by multiplying by a power of ten. The dividend must be multiplied by that same power of ten if the quotient is to remain unchanged (30/.5 = 10 x 30/10 x .5 = 300/5 = 60). Therefore, $.5\overline{)30} = 5\overline{)300}$ is used in developing a procedure for dividing by a decimal. A short-cut procedure, as $.5\overline{)30.0_\wedge}$ is then understood as multiplication of the divisor and the dividend by the same power of ten.

Measurement:

Teaching measurement to children involves more than the memorization of tables and the development of skill in translating one kind of unit into another. It is essential that pupils understand measurement and are able to use measuring devices efficiently.

The Nature of Measurement. When man counts, he is using numbers to "keep track" of objects. It is also possible to use numbers to describe an object--a toy car is ten inches long, it weighs three pounds, it travels two miles an hour. While numbers used to tell "how many" are usually exact, all measurements are approximations. An arbitrary unit is chosen--for example, a ruler marked in inches--which we compare with some object whose length, (in this case) we wish to ascertain. Comparison inevitably involves a certain amount of error. Accuracy in measurement refers to the ratio of the largest possible error to the total error. If a board is measured to the nearest inch, and we say it is 23 inches long, this means it measures between 22½ and 23½ inches. The largest possible error is ½ inch; the relative error is 1/2 ÷ 23, or 1/46. Precision in measurement refers to the instrument used. We may measure the length of a room in yards, feet, or inches; the smaller the unit being used, the more precise is the measurement, but none are absolutely exact.

Elementary Topics in Measurement. As early as first grade, children can be introduced to linear measurement (inches, feet, yards), liquid measure (cups, pints, quarts), weight (pounds, ounces), time (minutes, hour), and money. At later grades basic understandings of temperature, area, volume and speed measurements are developed.

General Concepts of Measurement. In planning teaching units on measurement, emphasis will probably be on measures commonly used in the community in which the children live. The following general concepts, however, apply to all measurement:

(1) Measurement is a process of comparison.
(2) All measurement is approximate.
(3) Measuring instruments vary as to precision.
(4) Accuracy in measurement depends upon the precision of the instrument and the skill of the user.
(5) The unit of measurement used must be of the same nature as the object being measured.
(6) Standard units of measurement are usually defined by law.

Reference Measures. It is often difficult for children to develop concepts regarding measures. Only through many personal experiences can such ideas as a pound or a gallon be thoroughly understood. Large measures such as a mile or 2,000 pounds can be especially difficult. It is often helpful to develop a list of familiar equivalents which may be used in estimating. A study of the history of measurement will reveal the origin of many common reference measures in use today, and groups of children can "invent" others to suit their particular needs. The following list is illustrative:

(1) A mile--the distance from school to City Hall.
(2) A square yard--the measure of the samll bulletin board.
(3) A ton--the total weight of the pupils in this class.
(4) A pound--the weight of a pint container of water.
(5) A minute--the time it takes to count aloud from 100 to 160.

Teaching Measurement to Children. There are two aspects of the study of measurement, (1) experiences which increase the pupils' understanding of various standard measures, and (2) computation with denominate numbers.

Children must have opportunities to use various measuring devices. Many classrooms contain only rulers and yardsticks; they ought also to contain measuring tapes of various lengths, balance scales, thermometers, protracters and standard containers for liquid and dry measure. In the beginning, experiences with non-standard units help to emphasize the value of having standard scales. After the need for agreement concerning measures is understood, many experiences involving comparison and estimation should be provided. Experiences which grow out of activities within the classroom emphasize the need for refined methods of measuring. Such activities might include the following:

(1) Measuring children's height and weight.
(2) Measuring water to fill the aquarium.
(3) Measuring ingredience to make bread or cookies.
(4) Finding out how many 36 inch squares of colored paper are needed to cover the bulletin board.
(5) Finding the cost of putting a tinsel border around the bulletin board at 5 cents a foot.
(6) Keeping a record of daily temperatures.

Denominate numbers are "named" numbers, 2 feet, 3 inches, 4 yards. When computations are done with such numbers it is often necessary to "rename" the terms. If the denominate expressions are unlike (2 feet + 5 inches) the unlike terms must be changed to like terms (24 in. + 5 in.) before the numerical operations can be performed. The renaming necessary in "carrying" and "borrowing" must be done in terms of the unit involved, instead of in tens. Computation with denominate numbers may be thought of as computation with a variable base.

①

$$\begin{array}{rll} & 2\text{ ft.} & 9\text{ in} \\ + & \underline{1\text{ ft.}} & \underline{7\text{ in}} \\ & & \cancel{1}8\text{ in.} \\ & 4\text{ ft.} & 4\text{ in.} \end{array}$$

$$\begin{array}{rll} & 2 & ④ \\ & \cancel{3}\text{ qts.} & \cancel{2}\text{ pts.} \\ - & \underline{1\text{ qt.}} & \underline{3\text{ pts.}} \\ & 1\text{ qt.} & 1\text{ pt.} \end{array}$$

①

3 hrs. 20 min.
x 5
100 min.
16 hrs. 40 min.

2 lbs. 3 oz.
6 | ~~13 lbs.~~ ~~2 oz.~~
12 lbs. 18 oz.

Emphasis in instruction should be on the understanding of basic relationships among units of measurement. Much of the difficulty children encounter in working with denominate numbers stems from a lack of understanding about what is being measured and how it is being measured.

Other Elementary Topics in Mathematics:

The concepts briefly discussed in this chapter are largely arithmetical in nature. This is not meant to minimize the importance of elementary concepts of algebra and geometry usually taught in a modern program, or to imply that children from disadvantaged backgrounds cannot, or should not, be taught such concepts. The understandings outlined here are felt to be basic, however, and are essential to the development of a sound foundation for the understanding of more abstract concepts of elementary mathematics.

The Teacher:

It is the responsibility of every teacher to help each child develop his potentialities to the fullest. In order to function effectively, a teacher must understand the subject he teaches and the children he teaches. Those who teach mathematics will find it necessary to develop skills in the following areas: (1) analyzing mathematics to identify its basic concepts, (2) selecting materials and techniques which are effective in developing those concepts, (3) individualizing instruction so that each child experiences challenge as well as success, and (4) communicating to every child the knowledge that he is loved and valued and has a significant contribution to make.

Teachers who have a sound knowledge of mathematics and appreciate the role of mathematics in modern life, and who are qualified by both training and temperament to work with culturally deprived learners, are sorely needed if we are to improve the social and economic opportunities of these currently undereducated children.

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CHAPTER 5 - PARTICIPATION-OBSERVATION

An Experiencial Program as Part of Teacher-Training

Need for Actual Experience with children

A teacher works with many groups, classes, and types of children. In order to understand the children with whom a teacher has the responsibility to educate and indoctrinate, he must be familiar with their culture, their mores, their value systems, and the interaction within groups and between groups. In the American society as a whole there is a class system and a caste system. Usually the class system is divided into three large groups, the upper, the middle, and the lower. Sociologists also divide the system into six groups, such as lower-lower, upper-lower, lower-middle, upper middle, lower-upper, and upper-upper. The caste system is more difficult to define because many do not admit that it exists. The Negro-white controversy may be considered an outgrowth of a caste system. Any minority group or subcultural group may be considered as part of the caste system and usually the "out" group.

With the mobility of people today and the concern of many for the individual rights of others, it is not uncommon to find a school or a classroom filled with children from more than one social class and from more than one minority group. It should be realized, of course, that subcultural groups or minority groups contain a social class system. All such groups have a high or upper class, a middle class and a lower class. Although a subcultural group has a standard of its own consisting of the mores and values of the group. the classes within the group will vary greatly. The upper social class of such a group pulls away from the group and begins to take on the mores and standards of the society as a whole. It divorces itself from the subgroup. Usually, the upper social class is better educated, have a higher standard of living and is more widely accepted by the society as a whole.

The majority of persons composing a subcultural group are from the middle and lower social classes. They hold on to old customs; are more poorly educated and are deprived of the cultural advantages of society. Within the society of the United States there are many minority groups and subcultural groups. Most of the people within these groups have suffered in one way or another by not having the advantages, the understanding, and the opportunities that are offered to others within our society. Briefly, some of the groups that compose our society will be noted. The one group with which we are all now quite aware has suffered is the Negro group. We are aware of this group because a large segment of our population are Negroes. They have been opening our eyes to some of their problems, and some action has been taken to provide equal opportunities to this group. Conant[1] made reference to the problems of the Negro and the slum conditions under which they live. To better understand the conditions that exist today for the Negro, one must consider conditions in the past and the chain of circumstances recorded in American history which have caused today's problematic state.

The Negro was brought to this country to work as slaves on plantations and to do menial tasks. They served as a cheap labor force, and were thought to be inferior to the white man. The land owners and businessmen who took advantage of this cheap labor did not desire to educate these people but perpetuated their way of life. By so doing, they could maintain the Negro in a subordinate role. Generation upon generation the Negro was taught that he was inferior and could not expect to advance above the level of the common laborer. Believing that they were inferior and keeping many of their superstitions and tribal practices they were unable to raise themselves from the deriving environment in which they were placed. It was a monitary advantage for the employer to propagate this belief and a parsimonious environment. After the Civil War locations changed but conditions remained the same. Where before the Civil War the vast majority of the Negroes lived in the Southern States, after the War many were forced to move to the North to find work. The jobs that were available for them were very menial and educational facilities for the children meager. Due to their low economic status and to their race and beliefs they were destined to live in destitute confined communities. Still the majority of the Negroes remained in the South trying to eke out an existence which in most cases was almost subliminal.

Another group that has been misunderstood and has lived in deprivation is the Mexican-American. Although they have been in the southwestern part of our country for hundreds of years, they have played a secondary role in our society. The "white" man did not understand their ways and customs, and therefore, treated them as scum and foreigners. A major problem was the language barrier that existed between the "whites" and these people. Their customs were different, their skin was a little darker, and their language was different, which all contributed to their being considered "different" from the minority group and were not thought to be as good as others. Like the Negro they were only given menial jobs and were forced to live in a community of their own. The children attended schools but the schools were of a low caliber and no effort was made to realize that these children may need a different type of curriculum than that which was offered to most children. In many Mexican-American homes the girls are considered subordinate to the male members of the family. The only education that a girl needed was to be a good wife and mother, therefore, many girls did not achieve well in school and dropped out at an early age. It has not been until quite recently that school authorities have taken an interest in these people and have attempted to understand their culture. Most of the teachers of these children have lived under different conditions and come from a different background, and did not understand how these children thought or why they thought differently from themselves. Since the education that the children received was not suited to their needs and due to the type of work that was provided for these people they have been unable to advance personally or to improve their living conditions. As with the Negro, the Mexican-American for the most part has lived in a state of poverty and squalor.

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[1] James B. Conant, Slums & Suburbs (New York: McGraw-Hill Book Company, Inc., 1961), 147 pp.

The American Indian is another group that has not been understood, and have been thought to be savages. The "white" man has killed, robbed, and has treated these people as animals. We have chased the Indian off his land, ruined his supply of food, tried to change his way of life for our own selfish gains. He has been placed on reservations which are located in desolate areas and has been governed by the white man. The opportunities for these people have been very limited, and their insentives destroyed. The educational opportunities for the Indian have been very meagér, with little or no understanding of his needs. Many Indians today live in about the same environment, and under the same conditions in which they lived a century ago.

Since the minority groups have different backgrounds, different values, and a different culture than the Anglo-Saxon, they are not understood by society as a whole. Most of society believe that they should conform to our way of life, accept our culture for their own, and still remain in their own groups and not to rock the boat. Since the groups are not accepted for the most part and recognized as being of equal worth, many problems develop. There is a conflict which has developed within the groups between their way of life, their beliefs, and the way of life and the beliefs of larger society. They are not accepted as equals by the "white" man, but still are expected to do their share in contributing to the society as a whole. For the most part, the minority groups are restricted in where they may choose to live, where they may choose to eat, the places they may choose for recreation, where they may choose to work, the type of work they may do, and even where they may be educated. Having been deprived of many of the opportunities which should have been afforded them for many years they have been unable to raise their state in life.

Since most minority groups live in a slum area or older area of a community, the school buildings are usually very old. Although most school districts attempt to supply the schools located in these areas with modern equipment, the environment within the schools and surrounding the schools are depressing and not conducive to an enlightening educational program. Many teachers do not care to teach in such a situation, and most certainly do not live in such area. Teachers for the most part live in middle-class environments and must commute sometimes many miles to teach in schools located in slum areas. Since teachers do not live near schools occupied by minority groups, and they do not like the environment in which the schools are located, it is sometimes difficult to entice good teachers to teach in such neighborhoods. In most classrooms the teachers spend no more than about five per cent of their time on classroom control, but in many of the schools located in an area occupied by minority groups the teachers may spend well over half of their time with discipline problems. A factor which certainly may contribute to the development of such discipline problems is a lack of understanding on the part of the teacher for his pupils. Most teachers have a middle class or lower middle class background, and most teachers are Anglo-Saxon, therefore, their values, mores, and culture are quite different from those of the children whom they are attempting to teach. Having been raised differently and educated differently from the children in their classrooms, many of the teachers do not understand the children, and therefore, add to the problems of the children in their confusing and conflicting environment.

In order to do a better job of educating children of minority groups and providing them with the education that they need, it is important to understand the children, and their way of life. Teacher training institutions offer courses which were developed to provide a better understanding of groups, and social classes, but it is difficult to develop the understanding which is necessary by lectures and the reading of text books. Certainly the courses are necessary but it is also necessary sometimes to experience something, to learn it well and to understand it. The more time that can be spent by future teachers with the groups with whom they will be teaching the better their understanding of such groups will be. Conant[2] believes that the time spent by college students in directed teaching experiences and other experiences working with children is a most important part of the future teachers' training. Comments by college students receiving training in public schools in courses such as Educational Psychology gives further proof of the value of involving the future teachers in experiences whereby they are in close contact with the children. The following are some of the comments students have made: "This course is so much more meaningful when taught off campus." "I never really understood children until I had this experience in the school." "It is fun to take a course and actually see what the professor says put into practice."

In Project TEACH the educational methods and curriculum course was taught in a public elementary school located in a culturally handicapped area composed primarily of Negro children. The professor worked with the students for eight hours a week in a classroom situation. Two to three hours a week was devoted to experiences with children under the supervision of the regular teacher. The college students had the opportunity to work with small groups of children and to reinforce the teaching of the regular teacher. They also did case studies and became very familiar with the children. Once in a while they would work with the total class teaching a music lesson, or possibly a reading lesson. Charts I, II and III are check lists to be certain that the students receive the experiences of working with children that would better prepare them for directed teaching. The students would also see actual happenings in the classroom that their professor had told them about. For the observation-participation part of the program one student was assigned to a classroom teacher for one half of the semester at the primary level and a second teacher for the other half of the semester at an upper grade level. There was only one college student assigned

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[2] James B. Conant, The Education of American Teachers, (New York: McGraw-Hill Book Company, Inc.), p. 161.

to a teacher at one time, thereby providing the student with the opportunity to work more closely with the classroom teacher and the children. Groups of the college students also saw many demonstrations by master classroom teachers.

By working closely with the classroom teachers and by the instruction by the professor the students were able to understand some of the problems of the children. They learned how the children think, relate to one another, and how they differ from the average American child. They learned about their value system, about their language and about their home life. By working closely with the children they were able to appreciate some of their problems, and could relate more closely with them. Every child is different and communities are different, and if we expect to do a good job of training future teachers, we must provide them with the experience that is so necessary in the environment in which they will be working.

AREAS IN WHICH STUDENT PARTICIPATED

Participation of the student in classroom work is invaluable preceding directed teaching. We hope that it will also be helpful to the teacher. The following list is suggestive only and is offered merely as a guide to the observation teacher. The student is a helper only and at no time "teaches" or takes charge of class.

____
Student

Date								
A. Assisted with Routine Duties								
Read roll and entered absences								
Kept money accounts - milk, etc.								
Filed materials								
Typed ditto work, ran off								
Distributed, collected, cleaned up mat'ls								
Prepared paint, clay, etc.								
Checked library books, mounted pictures								
B. Assisted with Lunch and Playground Routines								
Checked play equipment								
Helped supervise games								
Assisted at lunch supervision								
C. Helped with Creative Activities--Classroom								
Located stories appropriate to unit or holiday								
Read to a group or told story								
Prepared bulletin board								
Brought record, played an instrument, etc.								
Brought a science specimen, model, experiment								
Showed class a folk dance								
Brought a rainy day game								
D. Assisted with Classwork								
Brought in a new spelling game								
Read spelling words to small group								
Corrected papers								
Helped a reading group								
Worked with an arithmetic group								

Helped with story writing
Assisted with field trip
Introduced new books for library reading to small group
Read informational material to small group

E. Worked with Individual Child
Heard a child read
Helped child with arithmetic
Helped child correct and copy written work
Wrote story dictated by child
Typed or wrote a story to go with child's picture
Helped non-English speaking children, new pupils, or those who have been absent

Chart I

AREAS IN WHICH STUDENT OBSERVED

The following check list is suggestive of activities the student may observe. It will be helpful to both the teacher and the college instructor if a record is kept of things observed by student. Please bear in mind that it is unlikely that any one student will see all of the things mentioned in this list.

____
Student

Check activities observed

Date								
A. Social Studies Research lesson								
Field trip								
Reporting								
Discussion								
Construction								
Dramatic play								
Block work								
Committee work								
B. Science Research								
Experimentation								
C. Physical Education								
D. Music								
E. Art								
F. Playground Activities								
G. Room Organization								

Chart II

AREAS IN WHICH STUDENT OBSERVED

The following check list is suggestive of activities the student may observe. It will be helpful to both the teacher and the college instructor if a record is kept of things observed by student. Please bear in mind that it is unlikely that any one student will see all of the things mentioned in this list.

____
Student

	Check activities observed							
Date								
A. Reading Lesson								
B. Arithmetic Lesson								
New concept or process developed								
Practice period								
C. Language Arts								
Written composition								
Oral composition								
Correct usage								
Spelling								
Handwriting								
D. Physical Education								
E. Music								
F. Art								
G. Playground Activities								
H. Room Organization								

Chart III

CHAPTER 6 - STUDENT TEACHING

The Basis for Suggested Changes:

To make changes in any phase of the professional education of teachers necessarily requires planning. It is most important that changes in training practices for pre-service teachers of economically disadvantaged children are carefully planned. Innovative or invented ideas used as the basis for making changes very frequently make the outcomes a consequence or result of the changes rather than the major force directing the nature of the changes.

Planning for change needs to focus on:
(1) the situational factors that necessitate the change
(2) the ends or goals the change should achieve
(3) and finally, the direction the change must take to achieve the desired ends or results

One important outcome of Project TEACH is that it provides the impetus and the base for planning curriculum changes for the training of teachers. Due to Project TEACH, a number of changes are suggested for the "practice" teaching or student teaching phases of the professional education of teachers of economically disadvantaged children. The suggested changes are the result of extensive study of factors in the total student-teaching situation in disadvantaged areas that indicate that certain changes are needed. These factors include:

(1) childrens' needs
(2) student-teachers' needs
(3) the influences operating in disadvantaged neighborhoods which affect the teaching situation.

Also, the suggested changes are the result of the re-examination of what student teaching should achieve, and a consideration of the various ways the desired results could be obtained. The planning approach utilized knowledge gained from Project TEACH. Current literature relating to the characteristics of disadvantaged children and their reactions to the school situation was examined, as were reports of other projects, and their plans for improving teaching in disadvantaged areas. Employed also were materials emanating from the office of the United States Department of Health, Education and Welfare.

Changes in conceptions regarding student teaching or "practice" in teaching were arrived at after examination and consideration of a number of factors influencing the total student-teaching situation in disadvantaged or "slum" schools. The analysis of factors began with a study of student teachers' reactions to their experience, both during their student teaching phase of training and after their training. This was followed by the identification of the needs and requirements of teachers that might be fulfilled in the education program to better prepare them for teaching in schools in disadvantaged areas. Problems of "practicing" teaching in "slum" schools were illuminated. Needs of economically disadvantaged children were studied. Certain factors in the contemporary society of the inner-city that affected the children, the student teachers and the school as a whole were examined. Certain aspects of the regular student teaching program that did not fit the needs and requirements of the inner-city school situation were identified. Finally, this knowledge was utilized and applied in determining the direction the changes in the student teaching program should take to improve "practice" teaching and to prepare more teachers, and more effective teachers for schools in economically disadvantaged neighborhoods.

Major Problems Affecting Education Practices for Teachers of Disadvantaged Children:

Study and analysis of all the factors relating to the pre-service training of teachers for economically disadvantaged children with the objective of improving student teaching practices served to identify some major problems that pertain to the total program of professional teacher education. Since these problems relate significantly to planning for change in student teaching practices, they are briefly presented and discussed.

The first major problem identified is: the lack of a clear-cut definition for the term "teaching." Since "teaching" can not be defined, there is no way to define "student" teaching. There is no agreement as to what the job of "teaching" at the elementary school level really is. Those who speak, write and act as if "teaching" applied to a series of actions whereby children learn content should be reminded that children at the elementary school level must develop many communication skills and many concepts before "subjects" can be approached in depth. Among many others, children must develop concepts relating to self and their role in the school as an organized institution, and enlarge their view of how education fits into the scheme of things.

The second major problem identified is: the overwhelming tendency to view the children in the classroom as a number of separate individuals unaffected by the social-psychological influences stemming from the class group situation.

It is proposed that the total classroom job of the teacher be viewed as one of leadership. If in the overall analysis a teacher is considered a leader, then the job of "teaching" can be analyzed and evaluated scientifically.

It is proposed further, that in addition to individual psychology, teachers have knowledge of group behaviors and training in group leadership techniques since they do not meet individuals on a one-to-one basis. Viewing the class as a group enables educators to place the total teaching act within a scientific frame of reference.

These points are elaborated further in another section since they strongly influenced the determination of needed changes in programs of "practice" teaching for teachers of disadvantaged children.

The Needs of Disadvantaged Children:

It is fairly well understood at the present time that disadvantaged children can not be trained or educated with any degree of success unless they are willing to learn and desire to learn. These children can not be persuaded or forced into learning or into accepting the tasks of the classroom until their images of themselves are changed and until the schools can demonstrate that they are able to fulfill the promises these children expect.

Among the most highly valued expectations exhibited by individuals are those which, when reinforced, confirm their perceptions of their own worth. These expectations are acquired in group situations such as are found in the classroom. Children become highly sensitized to the positive and negative reactions of others toward them. Their ability to be accepted by a class group depends to a large extent upon how clearly they perceive what is expected and how closely they agree with the expectations and values shared by other members. Groups that arouse strong negative or unpleasant expectations are usually rejected by individuals. Conversely, children who can not conform to what is expected by the group, or those who refuse to conform, are usually rejected or isolated by the group.

To a large extent, individuals derive their sense of personal worth from the groups with which they identify. Therefore, if children desire to belong to the school group yet find they can not gain acceptance, or can gain only marginal acceptance at best, they tend to desire strongly to leave. Those who join together to form sub-groups because they are similar in background or in their inability to achieve success in school have their attitudes and values toward school reinforced by these sub-groups. Thus, group pressure may cause many individuals to dislike school and the classroom work situation.

Divadvantaged children are as concerned as any other group of youngsters over acceptance and rejection and over personal achievement and failure. When they can not achieve as quickly as other children whom they already perceive as persons having more status, they see themselves as possessing few, if any, skills and qualities that are valued. Their already low self-concepts are lowered further. If they can not achieve or maintain a place of good standing in the class group, they have no way of proving to themselves that they are persons who "count" or who are "somebody." For children who "belong", the class group increasingly becomes a source of personal security and the means of gauging their feelings of success and failure in the various spheres of classroom activity. For those who do not belong, non-acceptance makes for insecurity and feelings of failure in all areas of the school program.

Children will not learn or desire to remain long in school if they feel they do not belong, that they are not wanted, and that their interests and abilities are not valued and accepted. Beginning teachers, also, who experience a sense of failure in their job assignment will not wish to remain teaching economically disadvantaged children. Teachers, as well as children, are concerned over personal achievement and failure. Teachers' concepts of themselves and of their abilities to help these children--and of the possibility of anyone being able to help these children are frequently set at the outset of their first teaching experiences.

The Needs of Teachers in Training:

During and following their "practice" teaching, many student-teachers and beginning teachers frequently reveal that they are not fully prepared to face the reality of the classroom situation. Some state outright that colleges do not train them "to discipline" or "in discipline". Because of lack of skill in leadership techniques, and in spite of "theory" and "principles" relating to creating a "good" work climate, many beginning teachers seem to be convinced that discipline is central to teaching practice. They have this attitude before beginning their professional education experiences.

On the other side, studies of dropouts show that youngsters who leave school say they do so because teachers are unfair. They punish all for the sins of a few. They feel rejected by teachers and classmates. They are afraid to ask for help--in fact, the numerous studies investigating the reasons for dropping out of school find that poor treatment by teachers is common reason given for leaving school as soon as the law allows.

The literature relating to pre-service teachers in training in disadvantaged areas, indicate that students in training desire more actual techniques for working in the classroom situation. Although beginners seem not to be certain what it is they want, from their statements and their reactions, it can be inferred that they desire that the on-campus professional schooling provide more practical knowledge in ways of handling particular kinds of situations that arise in the classroom. They appear to feel fairly competent in handling (preparing and teaching) a reading assignment for example, but they wish more practice and skill in organizing the class for each particular work assignment and handling problems that arise when conducting these lessons.

The implications of teacher reactions suggest that preceding student teaching and during the observation phase of their training, they should have "reality-training," or simulation experiences, training in leadership practices and knowledge of sociopsychological factors influencing the class group situation.

Sociopsychological research has led to new modes of thinking and acting when social change is desired. Sociopsychological investigations have introduced a new core of knowledge relating to group behavior, and to the behavior of individuals as they function in face-to-face groups. The science of behavioral technology has developed new processes and new techniques for creating changes in situations. The incorporation of the new processes and techniques provides the substance through which it appears that teacher-training programs can be improved.

Simulation--Providing Teachers with Reality Training:

At the present time, there is very little in the way of a usable body of general experience available to beginning teachers to give reality to the job of teaching before actually meeting the children in the classroom face-to-face. There is lacking in professional education a common frame of reference or a body of codified practical experience for the total teaching job that illustrates and provides a model for beginners so that they have a means of revising and testing their own procedures. Instructional techniques or "methods" provides teachers with knowledge and develops skill in teaching a particular subject area. But this learning is always out of the total teaching situation. Since most methods are directed toward the individual out of context of the total classroom group, provision needs to be made for training teachers in other aspects of the teaching job and do this without subjecting youngsters to the mistakes of beginners. Without the conceptual tools for integrating his knowledge and skills for teaching a particular lesson with all the situational factors involved in the functioning of the classroom group, the beginning teacher finds he can not perform effectively those methods of teaching he has been taught to do--particularly when working with children whose cultural backgrounds have not prepared them for school.

Simulation Techniques

It is suggested that pre-service teachers be provided with simulation training before beginning the "practice" teaching phase of their professional education for teaching the disadvantaged.

The concept of simulation is not a new educational technique. It has been used widely for many years in preparing beginners for various professions such as law, engineering, the military and more recently, management personnel. Simulation techniques are very new, however, in training pre-service teachers in classroom management or in making on-the-spot decisions for certain kinds of problem situations that may arise in the classroom that are unrelated to teaching a lesson per se, and which happen frequently in schools in poor areas.

Advantages of Simulation

The advantages of simulation for teachers in training for schools in disadvantaged areas can prove to be an effective educational technique for these reasons:

1. It can be employed to revise beginning teachers' concepts of "discipline" and can condense the process of problem behavior analysis into a relatively short period of time.
2. It provides the experience of "acting out" many of the different major functions of a teacher-leader by placing him in a situation similar to that which he will meet in his work. Use of actual incidents permits him to try out his knowledge--to sharpen his skill before he enters the "real" world of the

classroom. He can obtain experience in managing the total group with no damaging effects to himself or to the children by the mistakes he makes in the learning process.

3. The use of simulation makes it possible for a beginning teacher to assess the advantages and disadvantages of various courses of action. It directs attention to the importance of determining the significant factors in the classroom situation affecting the problem. It provides him with training in the process of behavior analysis.
4. It enables each teacher participant to become personally "involved" in a realistic classroom situation where he must work under pressure and yet correct a problem or restructure the conditions causing a problem.
5. It makes an important addition to a beginning teacher's teaching skill by enlarging his concepts of classroom behavior of disadvantaged youngsters and by enlarging the variety of techniques he has available, thereby increasing his confidence in his own ability.

Simulation Design

Educators of teachers of disadvantaged children may use simulation in a number of ways. They may decide to develop a simulation design to fit the needs of schools in the inner-city in general, or simulation may be structured to fit a particular school and for a particular grade level area. It may be used as a stimulus for a course program of lectures, discussion and reading, or a focal point toward which material such as teacher communication and interaction processes can be directed.

Presented is a suggestion for improving teacher training practices by using a type of simulation. It is a summarized version of a two-part course proposal that could be used for re-educating experienced teachers for work in "slum" schools or it could be used as a method for giving "reality" training to pre-service teachers before they begin "practice" teaching. This use of simulation can be employed not only as a means of improving teachers' communication practices, but can be used as well as a means for increasing enthusiasm and satisfaction for working with the disadvantaged and as a means of changing teachers' preconceived viewpoints of disadvantaged children and the difficulties of handling such children.

Since the concern of some trainees in Project TEACH was for more help in establishing a positive preventive classroom climate, the suggested course proposal which follows is an example of what might be done in curriculum change.

Example of a Simulation Design

1. **Course Title:** Training in Teacher-Group Interaction Processes in Inner-City Schools

2. **General Description:**

(1) Inquiry into class group interactive behaviors

in urban school classrooms. Elements in classroom interaction. Analysis of category systems as basis for understanding teacher-group interaction processes.

(2) Systematic training in teacher-group interaction processes through employment of simulation techniques. Emphasis on diagnosing incidents and situations typical or urban classroom groups. Analysis, prescription, and demonstration of appropriate teacher actions and reactions.

3. Aims and Objectives:

(1) To develop in teachers of disadvantaged children attitudes of suspended conclusion and the desire to seek new materials to refute or corroborate opinions they have acquired and attitude developed from frustrating classroom experiences.

(2) To develop in teachers working with disadvantaged children the desire to carry on systematic and protected inquiry into ways of helping these children.

(3) To develop awareness on the part of teachers of the effect of teacher interactive behaviors on the class groups in urban schools.

(4) To provide a conceptual framework of class-group interaction for teachers to examine problem situations and behaviors of children.

(5) To provide a conceptual framework for teachers to examine their own interactions with the group in the urban classroom.

(6) To employ small group training procedures to change teachers' perceptions of classroom problems and their attitudes toward children by viewing classroom behaviors in terms of a total interaction pattern in which the teacher is an integral part.

4. Methods:

(1) Examination and critical analysis of actual problems of teaching disadvantaged children.

(2) Use of simulation techniques to develop understanding and appropriate teacher-group interaction and leadership patterns. Procedures include use of:
  (a) small group study of factors typical in classroom situations
  (b) a modified case approach
  (c) an adapted incident process
  (d) anactment and re-anactment of incidents for purpose of analysis
  (e) demonstrations of teachers' actions and reactions

5. Justification and Use:

Project TEACH has demonstrated the need for certain changes in curriculum particularly in the area of preparation of students for practice teaching. Project TEACH demonstrated that courses are needed that are designed specifically for teachers in the inner-city schools. Further, the Project has illuminated the need for courses that utilize and adapt the most effective approaches to problems of teaching in schools in areas such as Watts where news reports and other sources may influence attitudes before teaching ever begins.

Leadership Training:

What prospective teachers need to learn in their professional education courses stems primarily from conceptions of what teaching is and how teachers can best learn to teach. As stated previously, up until the present time the majority of elementary educators (used here to mean the teachers of teachers) appear to have very hazy conceptions of what teaching is and what it entails particularly at the elementary school level. The pedulum has swung back and forth from those who say, "We do not teach subject matter--we teach children," to those who claim, "Teaching consists of knowledge of subject matter and skill and competency in translating this knowledge into terms children can understand at their particular developmental level."

Each occupation has its own vocabulary and "jargon" which is understandable to members belonging to the particular work group--the exception is teaching. There are cliches and abstractions used in the profession, there is very little in the way of a set of shared action words or operational terms that reveal a specialized way of looking at teaching and the requirements of job performance.

For training and skill development in leadership to be effective, it is most important to analyze carefully the nature of the training needs both from the standpoint of the teacher-participant, the children, and the classroom situation. The training of teachers before "practice" teaching needs to involve a number of complex activities--the development of leadership practices, the development of human relation skills and the development of techniques for changing unfavorable attitudes and values toward self, the class group, the school, and most importantly--school tasks. The experiences obtained from working with teachers and pre-service teachers in disadvantaged areas suggests that teaching--or the total job of working in the classroom situation--can be considered as acts of leadership. Viewing the teaching job as one of leadership and considering the teacher as a leader in the classroom provides a basis for a new sequence of professional courses and new patterns of leader training.

It is suggested that preceding actual student teaching, a course or courses in group leadership training be provided for pre-service teachers. This type of training can be in the nature of clinical experience and may include:

(a) participative case method (enactment of problematic teaching situation);

(b) T-group training in observant participation (overcoming what is called "selective inattention", obstacles to communication and developing understanding of what takes place between self and others--developing skills in observant participation to acquire abilities to act, to monitor the action and to accurately assess the consequences.)

(c) incident-process method (presentation of a critical classroom incident requiring adjudication and decision. Teachers analyze and prescribe in small group setting. Moves individuals closer to self-examination and toward analyses of behavioral consequences of actions--verbal, performative and/or expressive.)

Student Teaching Seminars:

The wastage in "practice" teaching is serious and this applies to all student teaching situations, whether in disadvantaged schools or in more favorable situations, since many teachers drop out following training or shortly after. The difficulties and shortcomings of practice teaching are the result of not relating theory, subject content, and instructional techniques to the actual conditions of classroom teaching. One source of difficulty lies in the fact that educational learning theory and instructional practices both are based on teaching children individually. When the pre-service teacher begins his practice teaching he soon discovers that these individuals are embedded in a group. He has had no background or training for handling group phenomena, nor does he (or the master teacher) have skill in analyzing whether the "problems" in the class are the result of group influences, or whether these "problems" really indicate that children individually are having difficulties.

It is suggested that seminars accompany student teaching which involve the master teacher also, and that these seminars be used as a means for analyzing and discussing actual problems of group behavior which occur in the classroom or are carried over from outside sources to the classroom. Techniques for handling these problems provides a means for master teachers and students to analyze and plan together. Hopefully such a practice might bring the viewpoints of teachers and students into closer harmony.

The seminars can be implemented by evaluation sessions conducted by the college supervisor and including the regular classroom participating teacher. Evaluation sessions should stress:

(1) diagnosing incidents of group behavior observed in classrooms considered disciplinary; prescribing if change is desirable; and discussing processes and techniques for changing behavior.

(2) methods of increasing group attractiveness and cohesiveness and preventing discipline problems from occurring.

This important aspect of the training program can be implemented by conferences and group meetings of student teachers, master teachers, and college supervisor(s) for the purpose of evaluating behavioral changes that occurred in the various classroom groups. Where sufficient change has not occurred, some sessions can be devoted to reviewing the processes for achieving change, and mutual aid will be sought of all school personnel. The college supervisor can employ group and individual methods to develop cohesiveness throughout the school, and to create a mutual desire to achieve school objectives.

The content suggested for this area is designed to reinforce the concepts developed in the previous courses, but in addition to carrying out formulated plans for achieving specific objectives, student teachers will be helped by the master teacher and college supervisor to respond to problems which may (and do) evolve as the interaction between pupils and student-teacher proceeds. It is in this area of pupil-teacher interaction which can not be predetermined that beginning teachers have difficulty. Before actually assuming the teacher role, the prospective teacher can learn to analyze group reactions and to plan the logical operations to be performed with the group. However, since the personal characteristics of each student teacher have some communicative elements, and since there are many non-verbal communications transmitted within a given teacher-group situation, the student teacher must be assisted in analyzing teacher-group interaction and the meanings that unknowingly have been communicated that may have served to decrease the student-teachers' effectiveness.

The major suggestions for improving the practice-teaching phase of teacher education are related to preparing pre-service teachers for the situation they will meet when they meet the class group face-to-face. It is believed that beginning student teachers are so concerned with themselves that they can not provide the disadvantaged children with the support they need and conversely, these children can not provide student teachers with necessary feelings of success. Therefore, beginning student teachers in disadvantaged areas must be given clinical practice in teacher-group interaction processes, simulated classroom experiences and leadership training before actually beginning practice teaching.

The objectives of such a training program may be said to be:

1. To provide knowledge of classroom group leadership practices that focus on the situational aspects of the class group (e.g., the nature of the class group, the structure, composition, attitudes of members.)
2. To give student teachers the opportunity to discover what actions are required by specific class groups, and the opportunity to perform these acts under simulated conditions before student-teaching in classrooms begin.
3. To enable student teachers to perform leadership functions that are "non-teaching" in nature.
4. To provide the student teacher with knowledge and practice in working with the class group and individual members on task objectives for the purpose of developing effective practices for setting and carrying out goal-oriented activities.
5. To give students assistance in evaluating whether the tasks they actually perform correspond with the tasks they are supposed to perform.

6. To insure that there is not a great discrepancy between the tasks the student performs and the responsibilities originally outlined and defined.
7. To evaluate the leadership performance of students with objective instruments so as to determine if they are effective in their particular class situation, or if they might be more effective in a classroom influenced by quite different situational factors.

In summary, the suggested changes in student teaching practices for teachers of disadvantaged children are as follows:

1. Introduce pre-service teachers more slowly to "practice" teaching by using a variety of similations basing the problems on actual classroom situations observed in the schools of the inner city.
2. Provide the means of extending teachers' concepts of teacher action and reaction patterns, communication practices, and the total effect upon individuals, the class group, and the classroom environment before and during their "practices, and the total effect upon individuals, the class group, and the classroom environment before and during their "practice" teaching phase of training.
3. Adapt procedures found useful for training personnel in other fields to training students to teach. This might include not only simulation, but other techniques used in human relations training for business management.

Urban areas are facing growing problems in terms of meeting the needs of diverse groups. Cities continue to be the centers of large numbers of persons whose backgrounds of education and training are limited, or which have followed traditional patterns of training.

To meet these new demands, it is felt that teachers who will work with these groups will need a definite and special kind of training if the job is to be done well. It is felt that the program changes suggested in this section are a move in this direction.

CHAPTER 7 - THE REACTIONS OF ELEMENTARY TEACHERS AND THEIR PRINCIPALS TO THE TEACHER EDUCATION PROGRAM OF PROJECT TEACH

Introduction:

Under the direction of Dr. Rexford Bolling and Dr. Lois Johnson, Project TEACH (Teacher Education for the Advancement of the Culturally Handicapped) entered Phase I. Phase I concerned itself with the training of student teachers specifically for working with culturally disadvantaged children. Two of the specific aims of Phase I were:

1. To create different curricula incorporating a meaningful series of courses designed for the teachers of the culturally deprived.
2. To implement the curricula as a demonstration of the feasibility of preparing teachers specifically for educating the culturally deprived.

With the full cooperation of the Los Angeles City Schools and close cooperation of personnel from County, Youth Opportunity Board, and University of Southern California Study Group, thirty selected students (elementary education majors at California State College at Los Angeles) were taught courses in curriculum, instructional procedures, and materials in the language arts. A program of observation and participation was instituted. Direct contact with the schools, the children and teachers was an integral part of the program. The cooperating principals and supervisory staff along with teachers discussed demonstration lessons and answered student questions during numerous discussion periods.

After completing the training part of the program, students who applied for jobs in the area were immediately hired. In a letter to Dr. Lyle Hanna, Director of the Project, Dr. Jack McClellan, Assistant Superintendent of Elementary Area South, Los Angeles City Schools writes:

> The past few days we have been interviewing teachers trained in this Project. Without exception, all of the students coming to my office for placement have been most enthusiastic about their preparation. All have asked for assignments in culturally disadvantaged schools, and all have been placed in such schools in South Area.

Phase II is a follow up of the Project TEACH students in their first year of teaching. How well were these new teachers able to acclimate themselves to their new environment? Did the Project TEACH program better prepare them for working with culturally disadvantaged children? How do they feel about the Project now that they have become an integral part of the community? Should the program be continued?

A questionnaire was sent to each participant of the program. Each principal who had a graduate of Project TEACH was also sent a questionnaire. The questionnaire sent to the participant (teacher) was designed to find out his reactions to his situation in light of his preparation and training in the Project TEACH program. The administrator's questionnaire was designed to find out how he felt about each Project TEACH teacher compared to other new teachers that had served under him in the past.

All the questionnaires were used in the analysis and evaluation although separated into two groups. Group I consisted of questionnaires where both a participant and his administrator had replied so that some interaction could be noted between teacher, school and community; and administrator, school and community. Group II contained questionnaires that were received from administrators and teachers not directly concerned with each other, since some questionnaires were not returned in time for this report. The first group was analyzed in some detail on the following pages. The second group was analyzed and comments which seemed to exemplify the feelings and attitudes of the group as a whole were set down as "additional comments."

This report is not an attempt to present the material herein as data based upon scientific evidence. It is hoped, however, that some attitudes and future possibilities based upon good teaching principles and procedures that have appeared to succeed may emerge as guidelines to future programs.

Reactions of Teacher Participants:

After the questionnaires were returned by the participants, a careful reading of each one seemed to indicate an evaluation on the basis of positive and negative comments. Positive and negative comments about the program as a whole are listed below beside each teacher participant. Participants are listed as simply A, B, C, etc. One of the questions on the questionnaire seemed to be the best basis for evaluating the program by the participants. Responses to this question and additional related questions are noted below.

Question: How did your experience in Project TEACH help prepare you for this year's teaching?

	Positive		Negative
A.	Good information on student background - felt better prepared. I gained confidence.	A.	More subject matter needed (Teaching of phonics, etc.)
B.	Alerted to the problems one faces when working with culturally deprived children . . . Closeness with college supervisors very good. Observations of youngsters over a long period of time helpful.	B.	Need to be alerted to discipline problems. More emphasis on making lessons meaningful.

C. Helped me to know what to expect in Watts area. Project TEACH was one of the most enjoyable and beneficial classes of my college training - felt well prepared - would like to continue.	C. -
D. Helped me to gain insight into problems of children and parents in that area. Would like a seminar on occasion for exchange of ideas with other teachers in the area.	D. -
E. Made me realize the necessity of communicating about Watts area to this community (now teaching outside L.A.). More Negro master teachers and administrators needed.	E. College work in new Math lacking.
F. Prepared me to face situations realistically.	F. Subject matter preparation lacking.
G. Got good idea of what to expect from Project TEACH. Helped by getting a good understanding of the children before teaching.	G. -
H. Project TEACH gave me an awareness of conditions, homes, and backgrounds of the students and community.	H. More training in discipline techniques.
I. Project TEACH helped me get an understanding of the school and community. Project TEACH did more for professional preparation than anything in college.	I. Subject matter preparation lacking (methods).
J. Project TEACH helped me get an understanding of the school and community - found insight gained from program invaluable.	J. -
K. Project TEACH helped me prepare for all aspects. Notes from classes and texts very helpful. Knowledge of community - close contact with supervisors - observation of children very valuable.	K. Need more group discussions with other teachers to discuss similar problems.

Question: Knowing then what you now know, would you enroll in Project TEACH?

Every participant answered "Yes."

Reactions of Administrators:

The administrators who participated in the program were asked to evaluate the teachers who were graduates of the Project TEACH program and placed in their respective schools. The reactions of each administrator to his beginning teacher are listed below. A, B, C, etc. designate the teacher participant to correspond to the preceding pages. The answer to the following question will be preceded by an asterisk (*).

Question: In what ways, if any, has the teacher's preparation fitted him for teaching the culturally deprived?

Positive	Negative
A. Professional Qualities- Excellent Academic- Good Human Relations- Excellent Personal Qualities- Excellent *An understanding of teaching techniques for poverty area children.	A. -
B. Professional Qualities- Excellent Academic- Excellent Human Relations- Excellent Personal Qualities- Excellent *More understanding of the children their backgrounds and problems than most new teachers.	B. -
C. Professional Qualities- Excellent Academic- Excellent Human Relations- Excellent Personal Qualities- Excellent *More than adequate.	C. -

D. Professional Qualities- Excellent Academic- Very Good Human Relations- Very Good Personal Qualities- Very Good *--	D. -
E. Professional Qualities- Academic- Good Human Relations- Excellent Personal Qualities- Good *The program gave him an advantage over new teachers.	E. -
F. Professional Qualities- Excellent Academic- Good Human Relations- Very Good Personal Qualities- *Good background - time to adjust to location.	F. - Lack of drive.
G. Professional Qualities- Fair Academic- Good Human Relations- Good Personal Qualities- Good *--	G. Poor class control. *Not aware of any.
H. Professional Qualities- Very Good Academic- Very Good Human Relations- Very Good Personal Qualities- Excellent *Prior contact with culturally deprived in Project TEACH program has helped to understand them.	H. -

I.	Professional Qualities- Excellent Academic- Very Good Human Relations- Excellent Personal Qualities- Excellent *Difficult to say - few culturally deprived children at this school. She is child oriented.	I. -
J.	Professional Qualities- Very Good Academic- Very Good Human Relations- Very Good Personal Qualities- Excellent *A knowledge of children, school and community - better prepared to handle difficulties.	J. -
K.	Professional Qualities- Excellent Academic- Good Human Relations- Excellent Personal Qualities- Excellent *Fine understanding of these children - an understanding of their problems.	K. -

Additional comments by principals about teacher preparedness under the Project TEACH program are noted below:

> An understanding of teaching techniques that are more successful with the child from the poverty area. Less feeling of frustration when lessons are not successful because of the knowledge of the child from this area.
>
> Being able to be here and getting used to our situation before having the complete responsibility of a whole class was very helpful.
>
> Had some very good professors in her background.
>
> She was here, had the chance to learn first hand, and is ready to cope with the problems.

Miss _________ preparation and personal feelings have helped her gain an awareness that cultural background and lack of experience places additional obstacles in the learning pattern.

All beginning teachers from State College at _________ Street School have been of the highest in personal qualities.

Conclusion:

Reviewing the responses made by the participating teachers, it would appear that the number of positive remarks far outweigh the negative. Some of the teachers seem to feel a lack of subject matter preparation and a need for more instruction in methods and class control. However, it must be pointed out that this is a universal complaint of new teachers. It would appear significant that, although some of the teachers felt this need, it was not discernible in most cases by the principals. One teacher writes:

> I still feel that by being able to work right in the classroom during observation helped a great deal. Even though discipline techniques were really overlooked by me, I needed to get in and work with the children to be able to begin to understand them and the reasons for their problems. Even if I am unable to cope with and solve their problems, I am a little more aware of their cause than I might have been a year ago.

Every teacher who returned a questionnaire indicated that he would enroll in Project TEACH if he knew then what he knows now.

It seems apparent that the new teachers because of the prior training in the Project TEACH program, were able to adjust swiftly and confidently to their teaching situations.

A review of the comments by the administrators reveals very few negative comments. The Project TEACH teachers were rated above the new teachers the principals had worked with previously.

Much of the success of the program hinged on the fact that the training of the future teachers was done directly in the target area. The trainees worked closely with, and were made aware of the problems of the children, the school, and the community. Many of the fears and uneasiness of beginning teachers were dispelled by using this method of orientation.

Training in the area in which one will teach is important and could lead to an easy adjustment and confidence in one's own abilities. Frequently the school chosen for training is convenient for the college, but it does not necessarily represent the type of teaching situation a new teacher may be faced with. Project TEACH has pointed out that a realistic program of sociological orientation can provide enthusiastic, confident, and competent teachers.